THE IRON AGE

A Review of the Hardware, Machinery and Metal Trades.

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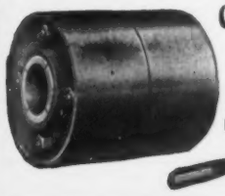

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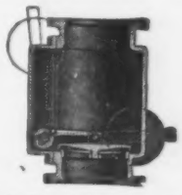

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THE IRON AGE

New York, Thursday, February 15, 1906.

Electric Canal Haulage.

BY FRANK C. PERKINS.

The success of electrically operated boats, towing motors and locomotive tractors, which have been tried in Europe and America, indicates that ultimately electric canal haulage will be used almost exclusively, on account of the economy, ease of manipulation and speed obtainable without injury to the canal banks. On the Teltow Canal in Germany recent experiments have been made by the Siemens-Schuckert Werke and the Teltow Canal management, with an equipment shown in the accompanying illustration.

The Equipment Used in Germany.

Four boats were used in these experiments, the Oder, Berliner, Finow I and Finow II. The Oder is 175 feet long and 27 feet wide and is shown in the engraving hauled by a Siemens and Halske electric canal locomotive. It weighs 140 tons empty and 503 tons loaded. The Berliner is 163 feet long and 24 feet wide and weighs 372 tons loaded and 100 tons empty. The Finow boats I and II are each 15 feet wide and 132 feet long. The test was first made with the locomotive tractor hauling two boats of different capacities, then with three boats and finally hauling the four canal boats. The towing rope was about 262 feet long and was connected to the locomotive over a towing mast, and to the front canal boat by a second rope, one end connected near the stern and the other just forward of the center.

The efficiency of the locomotive was found to be 66.8 per cent. at a speed of 2½ miles, the current used being 2.1 watts hour per ton mile. At a speed of 3 miles per hour the efficiency of the electric locomotive was 64.3 per cent., 3.2 watt hours per ton mile being used. It is claimed that the cost per ton mile by the use of the electric canal haulage locomotive is very much less than by steam haulage, while the speed is greatly increased. A considerable saving in fuel is claimed, while two men with electric haulage will do the same work as three men with steam power.

Direct current motors of 10 horse-power each are connected with both axles of the haulage locomotive through double reduction gearing. A rope drum is provided and an electric motor is used to wind or unwind the hauling rope. This rope passes over a frame truss on the locomotive arranged so that it may be moved up and down by another motor to allow other canal boats to pass. It is claimed that this locomotive tractor takes considerably less current than the electric tug boat, which was previously tested on this canal. It was 60 feet long and 12.5 feet wide, and is said to have required 43 kilowatts to haul a load of 450 tons at 3 miles an hour. This boat had three 20 horse-power electric motors, directly coupled to the three propellers, operating at a speed of 600 revolutions per minute. A storage battery supplied current when contact was not possible with the two trolley wires suspended along the bank carrying direct current from 500 to 600 volts. The electric tug boat was thoroughly practical, as the storage battery equipment made it independent of the trolley line for short periods in turning around and otherwise handling the canal boats being towed, but the efficiency was considerably less than the electrically operated locomotive tractors.

An Electric Towing Locomotive Tried on the Teltow Canal in Germany.

Electric canal haulage locomotives of the Koettgen type, with both double rail and single rail, were tried on the Finow Canal. The single rail tractor ran on two small grooved wheels arranged to take a large proportion of the weight and power, while a pair of broad tire wheels traveled along the canal path. This tractor weighed about 2 tons and was able to make a speed of about 4 miles per hour, about 15 horse-power being required.

For canal haulage a single track with a monorail locomotive was also designed by Ganz & Co. of Budapest, which is said to have a very high efficiency, the cost per

ton mile being very low. With this tractor a broad wheel was also used on the tow path, a large proportion of the weight of the locomotive, however, being carried on the rail by small wheels specially designed to grip the rail.

Other electric canal haulage tractors tried abroad included the electric tricycle locomotive previously tried on the Burgundy Canal. This haulage engine is said to have been equipped with a motor of about 10 horse-power capacity and weighed about 4000 pounds. The current was collected from overhead trolley wires and several canal boats of several hundred tons capacity were hauled at a speed of somewhat less than 2 miles per hour.

The Gerard One of the Earliest Systems.

The system of Leon Gerard, in operation on the Brussels and Charleroi Canal in Belgium, was one of the earliest and most successful systems tried. Electric tug boats were also tried on this canal, as well as tractors operating without rails on the tow path and taking their current from three overhead conductors by a long flexible cable and three trolley wheels. The tractors take 4.1 kilowatts when traveling at a speed of 2½ per hour without a load, and when hauling a canal boat of 70 tons at the same speed the current required was 4.85 kilowatts.

On the Belgian-Charleroi Canal at Disquercq experiments were made with a light tractor operating on rails, as it was found that the tractor operating on the tow path without rails was impracticable on account of the heavy cost of maintenance and the excessive wear and tear on the haulage device. A light tractor on rails was able to attain full speed in about 45 seconds. A heavier tractor hauling a 70-ton canal boat was able to attain a speed of 2 miles per hour in 50 seconds, operating on the tow path, while a tractor weighing 3600 pounds was able to reach the same speed in about 30 seconds.

American Experiments.

In America, experiments in electric canal haulage were made about a decade ago on the Erie Canal, one of the first tests being made at Rochester with a boat. Current was taken from a trolley line running along the bank and supplied two electric motors driving the propellers. At Tonawanda another experiment was made later on the Erie Canal, using the Lamb telpherage system. Two cables were installed on heavy supports over the canal, one above the other, the lower one being used for traction and supporting an electric motor carriage, while the upper one was used as a bearing and for conducting the current. On account of the heavy overhead construction required this canal haulage system has not been commercially utilized.

One of the latest electric canal haulage systems designed in America is similar to that of Thwaite, an English engineer, and was practically placed in operation by Stephen W. Wood of the International Towing and Power Company. Practical tests were carried out near the General Electric plant at Schenectady, N. Y., on the Erie Canal, a monorail construction being provided along the bank for a considerable distance. A 40 horse-power narrow gauge hog back electric mining locomotive was used, 10 feet long, 2 feet wide and 2.5 feet high from the rail. Two electric street railway motors gave the necessary slow speed through a 40 to 1 double reduction gearing, to give each motor driving a grooved wheel about 20 inches in diameter, traveling upon the upper rail. With this monorail locomotive tractor a speed of from 4 to 6 miles per hour was attained, with six canal boats in tow. It is claimed that this system is thoroughly practicable and can be utilized to advantage for hauling the 1000-ton barges on the Erie canal, when reconstructed, as easily as the 250-ton canal boats employed in this test.

A Successful System on the Miami Canal.

There is another American electric canal haulage system now in successful operation, using a double track electric locomotive for hauling the canal boat, as employed on the Miami Canal. An overhead trolley line is used, the current being supplied from a central power station generating a polyphase alternating current for transmission to various points along the canal.

These various systems of electric canal haulage are interesting, as there is every reason to believe that electric power can be used to advantage for hauling the 1000-ton barges from Buffalo to Albany and New York on the Erie Canal, when reconstructed, and it would not be surprising if electric power was also found the most practicable for hauling the ships on the Panama Canal, now proposed.

Corrodibility of Malleable Castings in the Ground.

A correspondent of *The Iron Age* asks as to the lasting properties of malleable cast iron when buried in the earth. We have the following comment on the question from Dr. Richard Moldenke, secretary of the American Foundrymen's Association, and an engineer of large experience in the manufacture and use of malleables:

From the experience I have had with scrap piles of the various materials, which will be a very fair criterion of them, malleable castings rust even more than steel. From the very nature of the material this stands to reason. The skin and immediate interior of a malleable casting is practically a steel, and a rather open one. Moreover, it is somewhat crystalline in structure, due to the original placing of the crystals of the white iron before annealing, perpendicular to the surfaces. The consequence is that moisture will penetrate pretty far and comparatively easily. Another circumstance, which shows the porosity of some parts of a malleable casting, was brought to my attention forcibly, when a lot of couplers were Harveyized or tempered in oil. On breaking in the testing machine all the parts of the metal which were the least liable to shrink spots had wide margins of oil around them, the penetration being over ½ inches in some cases, with the metal apparently as sound as the rest not so affected. From this it will be seen that such metal is very liable to rust. Finally, on removing some 30,000 tons of scrapped maleables I remember that the rust was taken up by the wagon load and dumped in the river. From all this I would conclude that malleable castings are not good for use when buried, at least in places where dampness is liable to be serious.

The Buffalo Multiple Turbine Electric Pump.—In an article commenting on the interruption to mining operations in California caused by the prolonged drought of last year, which exhausted the storage reservoirs of many hydro-electric power plants, the San Francisco *Chronicle* says: "Of the group of productive mines in the neighborhood of Grass Valley it is represented that only the North Star is at present pumping. The lower levels of other mines are flooding through the lack of water power to keep their pumps in operation. The North Star mine is, however, equipped with two Buffalo eight-stage multiple turbine electric pumps, each suitable for a 1400-foot head and each having a capacity of 300 gallons per minute. These pumps draw from the plant of the Bay Counties Electric Power Company. The electric turbine pump is proving its value now in a double sense, for the mine is not only kept drained by it when others are flooding, but it is doing more work with 250 horse-power than two steam pumps were previously doing with an expenditure of 500 horse-power." The electric pumps which are doing such good work were built by the Buffalo Forge Company, Buffalo, N. Y.

The McKeesport Tin Plate Company.—At the annual meeting of stockholders, held at McKeesport, Pa., the officers were re-elected as follows: E. R. Crawford, president; E. P. Douglass, vice-president; H. M. Clark, secretary; W. L. Curry, treasurer, and J. E. Lauck, general manager. The tin plate mill of this company beat all its previous records for output in January, turning out in that month 2682 tons of black plate. The best previous month was March, 1905, when 2671 tons were made. The largest output for one week was 670 tons. The plant contains 10 hot mills, all of which are running to full capacity.

The New American Radial Drill.

An example of the redesigned line of radial drills, as now manufactured by the American Tool Works Company, Cincinnati, Ohio, appears in the accompanying engraving. This 3½-foot arm plain radial drill will reach to the center of an 86-inch circle, has a greatest distance from spindle to base of 4 feet 3 inches, a spindle traverse of 10 inches, a traverse of the head on the arm of 2 feet 10¾ inches, and is built with either cone pulley or speed box drive, the latter being the form illustrated.

The feeding mechanism on the head provides four feeds, ranging in geometrical progression from 0.0069 inch to 0.0203 inch. Any feed is obtained by simply moving the sliding key of the feed device until the proper gears are driving. The all gear feeds have the advantage over belted feeds of increasing producing capacity, greater rapidity of change and positive action. The feeds operate through a friction, which permits the crowding of a drill to its limit without straining the feed works. At any position of the spindle the feeds can be automatically tripped by an adjustable trip dog and pointer acting on the worm clutch. Depth graduations are on the spindle, and all depths can be read from zero. Two or more dogs can be supplied, making it possible to counterbore any number of holes without resetting. The trip acts automatically at the lowest position of the spindle, preventing injury to the feed mechanism.

The speed box is of the geared friction type, providing four changes of speed, each instantly available by using the two levers shown. The friction clutches are powerful and consist of few parts, which can be made large enough to avoid slipping under the severest cuts and obviate the use of loose, delicate parts. A cone pulley may be substituted for the speed box at any time, as there is a coupling on the lower driving shaft and the base is drilled and tapped for either. If motor drive is desired any type of motor may be attached and the connection made either direct or through gears, chain or belt. It is the experience of the builder that the most simple, efficient and serviceable arrangement consists of a motor on the base connected by gears to a four-speed box.

The spindle has eight changes of speed, ranging in geometrical progression from 37 to 295 revolutions per minute, all immediately available without stopping the machine. This wide range of spindle speeds, combined with the exceptional driving power of the machine, renders the drill equally efficient with either ordinary or high speed twist drills.

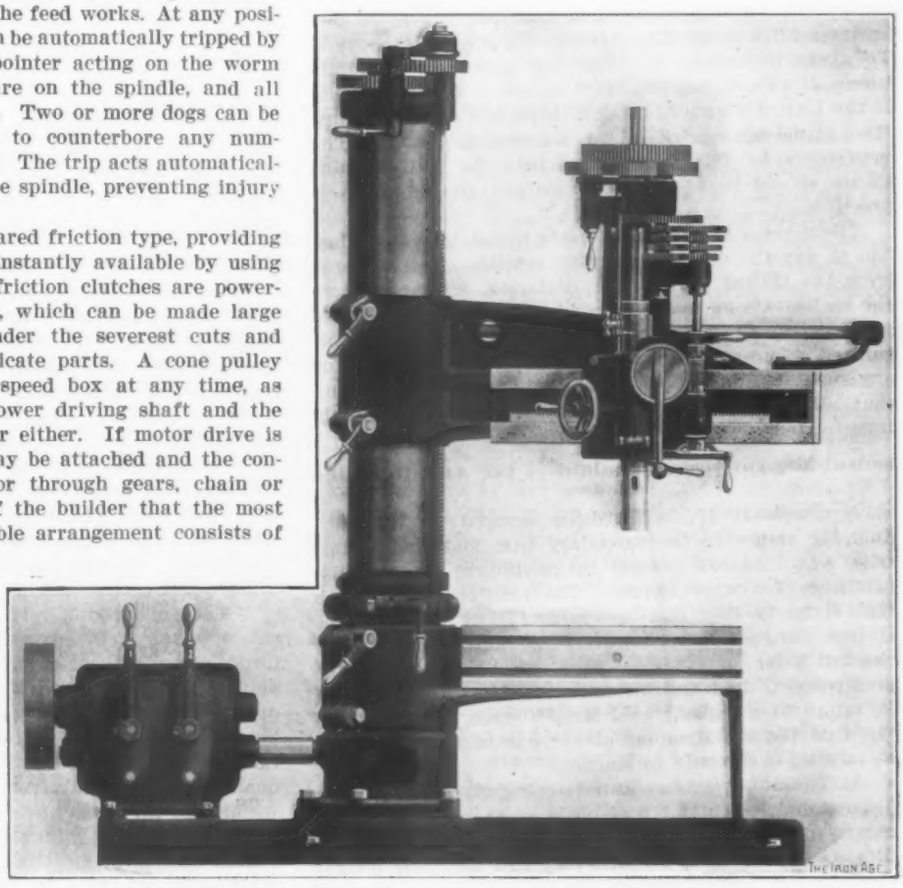
The column is of double tubular type, affording exceptional rigidity. The sleeve or outer column revolves around a central column and is clamped in any position by a V-clamping ring. This makes the outer column practically integral with the inner column, which extends almost the entire hight, and has bearings for the outer column at both top and bottom.

The arm is of parabolic beam and tube section, giving greatest resistance to bending and torsional strains. Its lower line being horizontal, work may be operated upon when close to the column without using an extreme spindle reach. The arm is clamped to the column by two binding levers, obviating the use of loose wrenches, and is raised and lowered rapidly by a double thread coarse pitch screw, controlled by a convenient lever.

The head is moved rapidly along the arm by a hand wheel through an angular rack and spiral pinion. A convenient clamping lever locks it in any position. The back gears are located on the head, thus bringing the greatest speed reduction direct to the spindle. They may be engaged or disengaged without shock or jar while the machine is in operation. The spindle is counterbalanced and has frictional quick advance and return. The tapping mechanism is carried on the head, between the back gears and speed box, so that the frictions have the benefit of the back gear ratio, making unusually heavy tapping operations possible, and also permitting taps to be backed out at an accelerated speed. The lever for starting, stopping or reversing the spindle is controlled at the head from the front of the machine.

The base is massive and strongly ribbed, especially where it supports the column. It is planed and has T-slots for bolting large work directly on the base. The plain box table has a top surface of 16 x 32 inches and a side surface of 6 x 32 inches, the latter giving the equivalent of an angle plate. Both top and side surfaces are planed and are supplied with T-slots.

The regular equipment includes a plain box table, countershaft and cone pulley drive. No wrenches are required. As extras, the company is prepared to furnish the speed box described above, a worm swiveling table, a round table or an improved electric motor drive.



The New American Radial Drill, Manufactured by the American Tool Works Company, Cincinnati, Ohio.

One of the most noteworthy battle ship designs which has been put into actual construction is embodied in the four ships of the Roma type, in the Italian Navy. The third of these ships was launched in September last, and is being completed afloat. The great features of the design are the splendid battery and protection elements, combined with an extremely high speed, and all obtained on a moderate displacement. The length is 474 feet over all (435 feet between perpendiculars); beam, 82 feet; draft, 25.8 feet; displacement, 12,624 tons. Propelled by twin screw engines supplied with steam by 22 Babcock & Wilcox water tube boilers, a speed of 22 knots is anticipated, with 19,000 horse-power. This is three knots ahead of other battle ships. The battery includes two 12-inch and 12 8-inch guns, 16 3-inch and a number of smaller weapons to repel torpedo boat attacks, and four torpedo tubes. The armor belt has a maximum thickness of 10 inches, while the protection afforded the heavy guns is 8 inches thick.

The Revision of the Canadian Tariff.

The Anti-Dumping Clause in the Canadian Tariff.

The sessions at London were remarkable for an enlightening discussion on the working of the anti-dumping clause in the Canadian tariff as it affects the iron and steel schedules. There was a complaint there from makers of threshing machines, feeders, stackers, weighers, baggers, and portable farm engines, that their American competitors were selling these machines in Canada and passing them through the custom houses at 35 per cent. off their list prices. In this way the American companies were doing a trade which was estimated at $750,000 a year.

It was stated that in this trade in Canada there are no middlemen; that manufacturers sell direct to users. It was also stated that in Canada there were no discounts off the list prices; and that Americans in this business allowed no discounts to United States buyers. To avoid the dumping clause the American manufacturers, it was stated, consigned machines to their agents in the United States to make a price, and then consigned them at the same price to branch houses in Canada. The petitioners in this case urged that the anti-dumping clause should be so framed as to put an end to these practices.

These same Canadian interests complained that they had to pay the dumping duty on crucible steel imported from the United States. Mr. Paterson, with regard to the statements as to the dumping of machinery, assured these petitioners that the Customs Department had organized a bureau which was diligently on the watch for any such attempts to evade the anti-dumping clause, and that all complaints of evasions were most searchingly investigated.

Consuming Interests Complain of the Anti-Dumping Clause.

A complaint of the hardship worked by the anti-dumping clause in the secondary iron and steel industries was made at London by petitioners for free list privileges for steel billets. The petitioners explained that formerly they had been able to buy freely in the United States. Now, however, the anti-dumping duty checked their importations, and with the help of the preference it had thrown some of the trade to Great Britain. "I am glad," said Mr. Paterson, "to hear you say that the anti-dumping clause nas been of some use in turning over trade to England."

At Toronto, when the anti-dumping clause was under discussion, a complaint was made as to its operation in regard to rolled steel strips. The petitioner—the Canada Steel Goods Company—stated they had last year bought steel in the United States for $25, paying a duty of $10.50, of which $3.50 was the extra duty levied under the anti-dumping clause.

The most bitter complaints, however, of the hardships of the anti-dumping clause made anywhere before the commission came from the Canada Bridge Company, of Walkerville, Ontario, when the commission was at Windsor, on the Detroit River. The company, which is now turning out 16,000 or 17,000 tons of bridge work annually, complained that the anti-dumping clause operated against it, and was a condition it had not contemplated when it established itself at Walkerville. The plant, which now employs 470 men, with a total payroll for the year in excess of $310,000, was located there as a convenient point for Pittsburgh, whence the raw material is imported. The company made a strong protest against the anti-dumping duty, as follows:

The Canada Bridge Company's Attack on the Anti-Dumping Duty.

"We were prepared to operate under the tariff conditions as they were in 1900 (the anti-dumping clause was enacted in 1904), and felt full faith in their stability so far as the importation of raw material was concerned, as the attitude of the Government was then plainly in favor of moderate duties, if anything tending toward lower duties rather than higher. We have gotten along with a reasonable degree of success under the existing tariff, and have had very little criticism to make of it aside from the recently enacted anti-dumping duties, which have tended to place a very considerable burden upon us. The only suggestions we wish to make with reference to the present tariff are that we would like to see the duty on coal entirely removed and the duty on small beams, channels, tees and zees weighing less than 35 pounds per yard reduced from the present rate of $7 per ton to 10 per cent. ad valorem, for the reason that not a pound of these is manufactured anywhere in the Dominion so far as we can discover, and no mill is apparently making preparation to roll them.

"The effect of the anti-dumping duties on our company has been very great, as it has very largely increased to us the cost of small angles, small plates and steel bars. We estimate that this extra cost for the year 1905 will exceed $15,000. This additional cost does not come so much from direct anti-dumping duties paid, as, indirectly, from the fact that the existence of these duties has to be considered in the making of our material contracts, with the result that we do not buy our raw material nearly as favorably as might be done if there were no anti-dumping duties.

BRIDGE BUILDERS ARE ESPECIALLY HARD HIT.

"We are strongly of the opinion that the anti-dumping duty should not have been applied to angles used by bridge builders, for the reason that up to the present time we have been totally unable to secure angles from any Canadian rolling mill for anything like a reasonable price or delivery. The only rolling mills in Canada pretending to make angles are located in Nova Scotia, at a tremendous distance from Walkerville, and up to this date we have never been able to secure any quotation from them which could be considered to have been made on a fair commercial basis from a bridge builder's standpoint. We can readily prove this statement by exhibiting our correspondence with them.

"The underlying principles of the anti-dumping clause of the tariff are undoubtedly correct, but as these duties are at present enforced they work a peculiar hardship to us located at Walkerville. We are, on account of our location, almost entirely dependent upon Pittsburgh for the supply of our raw material. We are too far inland ever to successfully import any considerable quantity of material from England and Scotland, and we are too far from Nova Scotia concerns to do business with them. Until rolling mills which manufacture open hearth structural steel in commercial quantities are established somewhere in this part of Canada we must continue to be dependent upon Pittsburgh as our principal source of supply; and if tariff modifications are made which will prevent our buying from Pittsburgh the result will be that the Canadian Bridge Company, Ltd., will have to go out of business or move to the eastern part of Canada, either of which would be very disastrous to the interests of this locality.

SCOTCH AND PITTSBURGH PRICES COMPARED.

"The peculiar hardship imposed upon us by reason of the present method of enforcing the anti-dumping duties can be seen from the following illustration, which is a perfectly fair example of what is happening continually with us. On January 1 of this year small angles could be bought in Scotland at 1.10 cents per pound; they could be bought in Pittsburgh for export at 1.15 cents per pound. The domestic price in Scotland was the same as the export price, whereas the domestic price in Pittsburgh was 1½ cents. The duty and freight on the Scotch material are 23 and 30 cents per 100 pounds respectively, bringing the total cost of the material at Walkerville to $1.63, whereas the duty and freight on the Pittsburgh material are 35 and 16½ cents respectively, bringing the total cost of the Pittsburgh material to $1.66½ cents, omitting anti-dumping duties on the latter. Under present anti-dumping regulations we have to

* Continued from page 502, February 8.

pay an additional duty of 17½ cents per 100 pounds on the Pittsburgh material, bringing its cost up to $1.84. Inasmuch as the purpose of the anti-dumping duty is merely to protect Canadian steel manufacturers we can see no reason whatever why such duties should be exacted on the Pittsburgh material bought at a higher, or even the same, price as Scotch material.

"It seems to us that there can be no good reason why we at Walkerville should be made to suffer simply because the Pittsburgh concerns sell to their domestic consumers at a higher rate than they charge us. It seems to us that English and German prices should be an important factor in considering whether or not the anti-dumping duties should be exacted, and that so long as our prices from the United States are not lower than these English and German prices the anti-dumping clause should not apply. It does not seem to us that the mere fact that United States concerns may be able to get higher domestic prices than English or German mills should be any reason why we should be punished with an anti-dumping duty. Canadian steel makers are not in the least harmed by our buying from the United States so long as we do not buy cheaper there than we can from the old country. What possible good can it do any Canadian steel manufacturer or anybody else to force us to submit to great inconvenience and heavy losses, through inability to secure contracts requiring prompt deliveries, by compelling us on account of the dumping duty to buy from European sources at prices practically identical with those we can get in the States?

QUICK DELIVERY NEEDED.

"The element of time is of the utmost importance in bridge building, and on this account it is generally much more important to buy material where it can be obtained quickly rather than where the price is the lowest. We execute many contracts in from 60 to 90 days' time, and most of our contracts have to be manufactured in from four to five months from receipt of order. It will readily be seen that it is usually absolutely impossible for us to secure material from abroad for such contracts. Experience has shown us that where we have attempted to get material from the old country it has often taken from three to four months to lay it down at Walkerville; whereas from Pittsburgh we can generally get our requirements filled within as many weeks. Our business extends from the Atlantic to the Pacific Coast in Canada. On our Eastern business we are now at a considerable disadvantage compared to our Eastern competitors, who are in a much better position to secure and use foreign material. They have always had the advantage of us as far as cost of raw material is concerned, and we have had to struggle against this handicap as best we could. Any change in the tariff which adds to our difficulty in trading with Pittsburgh will be that much added burden, and if the burden becomes much greater than it is now we simply cannot exist here at Walkerville.

LONG LENGTH ANGLES MUST COME FROM PITTSBURGH.

"Besides the element of time which has to be considered when buying from European sources we have another serious matter to contend with, in that we are unable to secure lengths of material from abroad exceeding 30 feet without paying big extras on them. These extras are paid partly to the mill, but largely to the transportation companies for extra freight. These extras apply up to a length of about 45 feet, which has been the maximum length which we have been able to import, as the steamship companies do not care to handle anything longer than this. In our business we require a great many angles greatly exceeding 45 feet in length, and in the majority of cases our customers would not allow of our using shorter lengths and splicing; this, of course, forces us back to the Pittsburgh mills, from which we can secure angles up to the limit of lengths rolled without extras.

"We understand that the steel manufacturers in Canada are proposing to ask for very heavy increases in duties on what constitutes our raw material, and we would most strongly oppose any such increases, as we do not believe that they are fair or just, or that they are called for by the conditions in the steel trade in the Dominion. We believe that all such items as beams, channels, tees, zees, universal mill plates and large sheared plates should pay only 10 per cent. duty, as none of these items are manufactured in Canada. We believe that all angles weighing more than 35 pounds per yard should remain at the 10 per cent. rate, for in spite of the fact that perhaps a few angles up to 8 or 10 united inches and weighing slightly over 35 pounds per yard may be rolled in Canada in very small quantities, the larger sizes certainly cannot be said to be manufactured in commercial quantities.

"On account of the nature of our business we must most strongly oppose anything that increases the cost of our product, as our bridges must come into direct competition with wooden structures. A higher cost of steel bridges prevents their use throughout the country wherever timber is obtainable, and causes not only a loss to us, but is detrimental to the country at large. The increasing of the present rates of duty on our raw material would perhaps assist a very small section of the country situated at the extreme eastern end thereof, but would be at the cost of a serious added burden on practically all the remainder of the Dominion."

Discussion of the Bridge Company's Protest.

There was much discussion across the table on this protest of the Canada Bridge Company. Mr. Fielding, always watchful to ascertain whether importing business can be thrown to Great Britain, pressed the petitioners as to whether they could not obtain their raw material from England and Scotland. In answer they reiterated the statements in their petition that this was impracticable, and emphasized the difficulties attending the handling on shipboard of the steel they need.

As to the bitter complaints of the hardship of the anti-dumping clause as it affected the petitioners' plant, Mr. Paterson, who is at the head of the department at Ottawa which administers this clause, reminded the petitioners that it was embodied in the tariff of 1904 to protect Canadian manufacturers against exactly such conditions as the petitioners had described as existing in the steel business of the United States.

Mr. Fielding was sure that the anti-dumping clause protected the bridge company from dumping by bridge builders in the United States. The representatives of the company, however, absolutely denied that bridge building plants in Canada had any extra protection under the clause, as it was impossible for appraisers to apply the anti-dumping clause to bridge construction. They acknowledged, however, that the Walkerville plant and the five or six other bridge building plants in Canada are now getting all the bridge construction in the Dominion.

Advertisements in "The Iron Age" Catch Canadian Trade.

Another interesting appeal in connection with the iron and steel schedules was made at Windsor by a company mannufacturing brass and iron valves. It is stated in its behalf that in brass valves Canadian manufacturers are getting all the business they can handle in the lower grades, but do as they would, no matter how good their output, they could not get the trade in the higher grade goods. These, it was stated, are widely advertised in *The Iron Age* and other American trade and technical journals. These journals are widely read by Canadian engineers, who insisted on having these advertised specialties. Only a Dingley duty, it was urged, would enable Canadian manufacturers to meet this competition.

Mr. Paterson told the witness that feeling in Canada was running against any high duties. The Dingley duty was 45 per cent., and there was only one instance of a 45 per cent. duty in the Canadian tariff. "We want the duty," answered the witness, "put at a point where we can keep the Americans out." Mr. Paterson asked if the petitioners were willing to have the American tariff all round; and pointed out how this would affect them as buyers of raw material. "Probably," replied the witness, "they have a better adjustment of the tariff on the other side. They seem to prosper better than we do. If they can give away valves as they are now doing, they must be more prosperous than we are." "You know,"

interposed Mr. Fielding, "that they don't give valves away at home." In discussing the advancing of prices to the cousumer if the tariff were raised, the witness stated that Canadian valve makers were not taking full advantage of the present tariff; and when asked by Mr. Fielding why not, he replied: "The Americans are dumping."

Machine Tool Builders Ask for Higher Duties.

Hamilton in a small way is the Cleveland of Canada. The Tariff Commissioners had two full days' work there, and most of the petitions had reference to the metal schedules. Eight machine tool manufacturers, including the Pratt & Whitney Company of Hartford, who have a plant at Dundas, Ontario, put in a joint petition asking for an increase in the rate on machine tools from an average of 25 per cent. to an average of 30 per cent. A reclassification of these tools in the tariff schedules was also recommended.

These manufacturers based their petitions for changes on the increased cost of raw material due to the anti-dumping clause. It was also stated that the supply of Canadian pig iron is at present limited; and consequently pig iron for foundry purposes must be purchased from the outside.

It was incidentally stated that $1,300,000 is now embarked in tool making plants at Dundas, Hamilton, Galt, Brantford and Hespeler, all in the Province of Ontario. The only competition in machine tools was from the United States. The petitioners asserted that competition from Great Britain, even under the preference, was of no account. Mr. Fielding inquired whether machine tools were not made in England, and whether English makers of tools could get into the Canadian market if they tried to do so. The reply was that they might in eastern Canada, where freight rates were easy.

It was here that the Canadian Westinghouse Company, which has a plant in Hamilton that cost $2,000,000 and employs 650 men, put on their petition in rebuttal of an expected request from the newly established brass factory at Toronto for a duty on rolled brass strips. The Westinghouse Company claimed that the duty would affect 65 per cent. of its raw material and declared that no brass factory within the next two or three years could take care of all the brass business in Canada.

Cold Drawn Steel Manufacturers Desire Higher Duties.

Within the last 12 months two plants, equipped for the manufacture of cold-drawn steel, have been installed at Hamilton. Both concerns petitioned for increases in duty in the interest of this new Hamilton industry. The Canadian Drawn Steel Company's petition was as follows:

"We think that some change is necessary in the existing tariffs as applied to our product, for the following reasons: Cold drawn finished shafting 1½ inches in diameter and upward is subject to a tariff of 30 per cent. ad valorem. Below 1½ inches in diameter is admitted at $7 per ton, and for steel of a value of 2½ cents per pound and over it is only 5 per cent ad valorem. About 50 per cent. of the drawn steel imported is under 1½ inches in diameter, and all of it is of a value of 2½ cents per pound, or over; hence, wherever it is possible the importers bring it in under the 5 per cent. head. The raw material for use in our mill is steel bars, shapes and sections, and this is subject to a duty of $7 per ton plus the anti-dumping clause, so that as at present placed we will pay a higher tariff on our raw material than the protection afforded to the finished article, and thus the tariff is acting against the establishment of such an industry as ours. From 3000 to 4000 tons of drawn or polished steel are now imported from the United States annually, which ought to be made here and on which very little duty is paid, while its selling price may be taken as roughly $250,000. The raw material for this is lost to the steel makers of Canada and it may be taken at $150,000. Now the classes of material which the 2½ cents per pound clause is meant to cover are high grade tool steels and such as are not obtainable in Canada, but not mild steel, such as shafting, &c., which will be our product. By the erection of our mill we have created a substantial reason for the closing of this loop hole.

"Should it be deemed advisable not to interfere with the tariff on our material because of its being the raw material for other industries to a certain extent, then we think the case can be met by allowing us to bring in our raw material free of duty, as is done in many other instances, such as steel rods for wire drawing, for cutlery, and for bicycle chains. This would not support the revenue of the country, but would add to the industries and benefit to the extent of wages spent, though in the case of the smaller sizes we would only have 5 per cent. in our favor and the United States mills would cut to keep this trade. We have now a fair number of inquiries for export, and this is a factor to be well considered. In conclusion, we would suggest that one of the following clauses be inserted in the amended tariff, namely: 'Steel shafting, shapes or sections, cold drawn, compressed, or otherwise polished, of whatever size or value, 30 per cent. ad valorem,' or 'steel, namely: Bars, coils, or bundles, round, square, flat or other shape, when imported by manufacturers of cold drawn steel for use in their own mills for the manufacture of their product, free.'"

Cast Iron Pipe.

There are four or five cast iron pipe plants in Canada. All of them are in the Province of Quebec or in Nova Scotia; and in connection with them all there were petitions for high duties, both against importations from the United States and Great Britain. The present duty is $8 a ton, with one-third off on pipe imported from Great Britain.

The first plea was put in by the Montreal Pipe Foundry Company when the commission was at Three Rivers, Quebec. The case for the company was stated by G. R. Duncan, superintendent of the Three Rivers plant. "The plant here," he said, "is equipped with the most modern machinery, and the investment amounts to $135,000. Its capacity is 28 tons a day, or annually 9000 tons. During 1904, however, it was found impossible to operate the plant to its full capacity, owing to shortage of orders, so that the total production for 1904 amounted to 6300 tons. Similar conditions have existed this year, due to the company finding it impossible to compete with English and Scotch makers for a number of orders placed, especially for seaport points in Canada. This competition comes altogether from Great Britain. In our opinion it is due to the fact that under the preference these pipes are subject only to a duty of $5.33 a ton, and to the low rate of freight from Great Britain not only to seaboard points in Canada, but under freight arrangements to inland points as well. We are also positive that quantities are sold for Canada at prices below the British market figures; but in the case of material such as iron pipe, in which the prices vary from day to day, it is impossible to prove dumping and have the anti-dumping clause applied."

British Pipe Sold Lower in Canada Than at Home.

In emphasizing this part of his plea Mr. Duncan read to the commissioners a private letter, written by a friend in the service of one of the large English municipalities, in which it was stated that the price for cast iron pipe had, during 1905, ruled at about $25 a ton. While this had been the quotation for pipe in Great Britain, Mr. Duncan assured the commissioners that the custom house returns at Ottawa showed that the average price of pipe sold in Canada was only $22 a ton.

Mr. Fielding suggested to Mr. Duncan that the Canadian pipe men were asking a pretty stiff duty on a very ordinary article. Mr. Duncan insisted that nothing less than an $8 duty against Great Britain would protect Canadian manufacturers against British pipe foundries. "It pays these British concerns," he added, "to dump rather than to stop work." "Our experience is," said Mr. Fielding, "that British manufacturers do not dump as American manufacturers do. Dumping is an expedient, peculiar, I think, to high tariff countries." Mr. Duncan, however, stuck to his point that while pipe had been sold at $25 in England the official figures showed that it was invoiced to Canada at $22 a ton.

Comparative Labor Cost in Pipe Foundries.

"In Three Rivers," continued Mr. Duncan, returning to his plea for more protection on the ground of higher

labor cost in Canada, "our skilled labor is paid from $1.25 to $2.45 a day, while in England and Scotland for the same class of work the wages paid amount to about $1.25 or $1.50 a day. Unskilled day laborers here in Three Rivers are paid $1.26 to $1.40; while the same class of labor can be secured in Great Britain at a maximum of 90 cents a day. The result is that while we spend on labor about $5 per ton, the actual cost to the English and Scotch makers is about $1.25 to $1.50 per ton less.

"Canadian manufacturers, owing to their geographical position," continued Mr. Duncan, "must pay for skilled labor wages equal to those paid by manufacturers in the United States. This not only applies in the case of Canadian manufacturers of cast iron pipe—to our own labor—but also to the raw material which we use. This is so, because the blast furnace companies are in the same position as we are as regards labor. Consequently they have to ask higher prices for their finished product than have been ruling for British pig iron during the last year."

The British makers of pipe, Mr. Duncan affirmed, have an advantage of $2.50 a ton, sometimes more, in the prices for pig iron. Coke costs $3 a ton more in Three Rivers than in England or Scotland, on account of the long railroad haul from the Connellsville country. All other foundry supplies are also more expensive in Canada than in England and Scotland; and, moreover, pipe could be shipped from Liverpool or Glasgow to Montreal, Quebec, Halifax or St. John and other ports in Canada at very low figures.

"The net result of all these conditions" was, to quote Mr. Duncan's words, "that English and Scotch makers can lay cast iron water pipes down in Canada at prices lower than Canadian manufacturers can afford to work at; and to protect the trade we consider it absolutely necessary that the minimum rate of duty should be increased from $5.33 to $8 a ton."

Mr. Duncan's plea was submitted to the commission at Three Rivers December 29. A month later, on January 28, at Londonderry, Nova Scotia, the case he had put forward was supplemented by J. P. Edward, superintendent of the Montreal Pipe Company's plant at Londonderry.

Want the Pig Iron Bounty Continued.

At that session also Thomas J. Drummond, president of the Londonderry Iron Company, asked for an increase of duty on pig iron and for a continuance of the bounties on pig iron produced at Canadian plants. He reminded the commissioners that the duty and bounty combined under the existing tariff would fall to 2.72 cents a ton in 1906. After June, 1907, the pig iron bounty would come to an end. His plea was that a bounty of $2 a ton be paid for five years longer from June, 1907; and that the import duty, now at $2.50 a ton, be made uniform against Great Britain and the United States. He complained that most of the competition with the Nova Scotia furnaces was from England and Scotland.

At the same hearing B. F. Pearson, member of the Provincial Legislature of Nova Scotia, urged that the Government should give a larger bounty than that now paid on pig iron made from Canadian ore. A similar plea was made January 29, when the commission was in session at Halifax, by A. F. Macdonald, editor of the Halifax *Chronicle*. His case was that there had been a decline in the iron mining industry of Nova Scotia since the Dominion Iron & Steel Company and the Nova Scotia Steel Company had been importing ore from Newfoundland. He asked for a bounty of 50 cents or $1 a ton on native ore of 50 per cent. metallic contents.

Lower Duty Asked on Tack Plate.

At Quebec, December 28, the Bazin Tack Mfg. Company petitioned for a freer importation of steel plates for tack making. "We use," it said, "in the manufacture of tacks and small nails, steel plates from No. 12 to No. 22 gauge. On plates No. 16 and thicker we have to pay a duty of $7 per ton, equal to about 20 per cent., while on thinner plates, which are of more value, we pay 5 per cent. The tariff was probably so arranged to give a protection to some tack manufacturers who make these plates, but they make them only for their own use and have none for sale. Moreover, they only make them in widths of 12 inches, while we import from 20 to 24 inches. Consequently they do not manufacture nor sell what we require, and we do not see why they should be allowed such protection against other nail and tack manufacturers in Canada. For these reasons we would ask that a special classification be made of steel plates imported by nail and tack manufacturers for use in their factories and the duty on all gauges be put at 5 per cent."

The Tin Plate Question.

Since about June, 1905, a newly organized corporation has been equipping a tin plate rolling mill at Morrisburg, Ontario. The company has already got some concessions from the municipality in the way of tax exemptions; and from the time the Tariff Commission was organized, on September 3, it was known that the company was to ask for the imposition of a duty on tin plate. Its petition did not come before the commission when it was on its five months' tour. It is to be submitted at the supplementary hearings in Ottawa. But at almost every manufacturing town, and at all the fish, fruit and vegetable canning centers in the Dominion, there were petitions to the commission against any concessions in the new tariff to the Morrisburg company. The opposition was very strong in the maritime provinces.

A Forecast of Tariff Changes Likely to Injure the United States.

While there were many other petitions affecting the metal schedules, I have summarized all that are of interest to the iron and steel trade in the United States. Apart altogether from the general appeals for changes in the tariff, the new iron and steel schedules will have much interest for the American trade. The British preference is to be greatly extended; and one aim of the commission is to amend the free list and extend the preferential tariff so as to make it obviously to the advantage of Canadian manufacturers to import partly finished material from Great Britain rather than from the United States.

This plan is to be adopted in accordance with the policy of the Government to throw as much as possible of the import trade of the Dominion into British hands, and also to increase the volume of westward freights for the steamship lines that are subsidized by the Ottawa Government.

There is also a likelihood that there will be another change in the tariff of much interest to the American iron and steel trade by reason of the effect it will have on the ports and railroads of the United States. At the present time imports to the value of $25,000,000 reach Canada via Portland, Boston, New York, Philadelphia, and Baltimore. There is a strong movement at St. John, Halifax, Montreal and Quebec, a movement which has met with much general support, to divert this transport business from American to Canadian ports. All these imports now have the advantage of the British preference. They pay only two-thirds of the duty levied on imports from America; and the project is to deny this preference to all imports which are not landed at Canadian ports.

It is probable also that there will be some radical changes in the Canadian patent laws as a result of the long and detailed investigations by the Tariff Commission. At Quebec there were serious complaints of the arbitrary conditions under which some American machinery corporations lease patented machines to Canadian factories. They charge royalties on production, and insert clauses in the leases which compel the lessees to buy their supplies from the lessors at noncompetitive prices. These grievances cannot be remedied in the tariff; but Great Britain has a clause in its patent code which denies the protection of the patent laws to patentees imposing conditions contrary to the public good; and there is a strong probability that the Dominion patent laws will be amended by Parliament at Ottawa to the same end.

A Possible Import Duty on Foreign Publications Carrying More Than 10 or 15 Per Cent. of Advertising.

As will have been learned from my summary of the proceedings of the commission, complaints were made of the extent to which American manufacturers are permitted to advertise their goods in American magazines

and journals circulating largely in Canada. I have noted only one of these complaints—that at Windsor. But scores of them, referring to other schedules, were made to the commission. The Canadian shoe men made a great point of these advertisements at every session at which the footwear schedules were discussed; so did the corset makers and the manufacturers of other specialties handled by dry goods men and stationers. At Toronto, where nearly a whole session was occupied in hearing these complaints, the commission noted with favor an Australian plan for dealing with advertisements in periodicals. Under this plan, which was adopted about a year ago, all foreign publications carrying more than 10 or 15 per cent. of advertising are subject to very heavy import duties—duties intended to be prohibitive of advertising matter; and the likelihood is that the Dominion tariff of 1906 will contain a clause to the same end.

The members of the Laurier Cabinet, who have conducted this long investigation, will not make any report. They are now at work on the schedule of the new tariff. In this they will have the assistance of all the members of the Cabinet; and when the tariff is complete it will be submitted to the House of Commons by the Minister of Finance as a bill, and it will become law in the shape determined on by Mr. Fielding and his two colleagues of the Tariff Commission.

(*To be continued.*)

The Maryland Steel Company.

Aside from the slackness in the marine department, a condition felt at nearly all Atlantic Coast shipyards, the plant of the Maryland Steel Company at Sparrow's Point, Md., is actively employed, and some plans are being carried out that will add to the output and the economy of production. Tug and lighter work constitutes the greater part of the orders booked for the shipyard. Three steel steam tugs, 105 feet long, are in hand for the Pennsylvania Railroad Company; six steel lighters, 111 feet long, for the Panama Railroad Company; one steam lighter for the Pennsylvania Railroad Company; one steel car float, 340 feet long, for the New York, Philadelphia & Norfolk Railroad Company, and two steel oil barges, 185 feet long, for the Standard Oil Company.

At the blast furnace yards of the company considerable Mediterranean ore has been stocked in recent months, the large export movement of grain from the United States making the freights on return cargoes of foreign ores unusually favorable. With the free outward movement of grain that is expected to continue for some months foreign ores will probably be brought in to an extent that will render unnecessary any purchases of Lake Superior ores for 1906. The four blast furnaces of the company have been operating steadily since August, 1905, practically at their full rated capacity of 400,000 tons a year. One furnace was idle in 1905 from January to August. The total pig iron production of the State of Maryland in 1905, as given in the American Iron and Steel Association statistics, was 332,096 gross tons, practically all of which was turned out at Sparrow's Point, since no other coke furnaces were active in Maryland in 1905, and the entire production of charcoal iron in both Virginia and Maryland last year, as reported by the association, was 2071 tons. Though using a mixture of Cuban magnetites and of Mediterranean ores running lower in iron than the average of Lake Superior Bessemers the coke consumption at Sparrow's Point has ranged from 90 to 95 per cent. of the pig iron output, or from 2050 to 2150 pounds. About 75 per cent. of the coke used comes from the company's 200 Otto Hoffman ovens. In addition to the by-products and the gas burned at the ovens, the coke plant furnishes 4,000,000 cubic feet of gas every 24 hours to the gas company supplying the city of Baltimore. The gas as delivered from the coke works is of 13 to 15 candle-power, the gas company bringing it up to 20 candle-power by mixing with water gas.

New Blowing Engines.

Four new blowing engines are building to replace four of the six engines now supplying blast for the furnaces. The new engines were designed by the Southwark Foundry & Machine Company, Philadelphia, and two are being built at its works and two in the foundry and machine shop of the Maryland Steel Company. Plans have been made also for an increase in the power equipment of the rail mill and the blooming mill. At the central engine house, from which blast is furnished to the furnaces and steel works, a Weiss condenser has recently been installed, having a capacity of 14,000 horse-power, this replacing the various individual condensers previously in use.

The new engines are of the Southwark horizontal vertical type. The horizontal end is cross compound, the cylinders being 44 and 81 inches diameter, with 60-inch stroke. The blowing cylinders have a diameter of 84 inches, with 60-inch stroke. These engines are of massive construction, weighing 400,000 pounds each, the bed plates being similar to the Porter-Allen type. Blast can be furnished at 20 pounds pressure, and at 75 revolutions 58,000 cubic feet of free air a minute can be delivered. The steam end is of the Corliss type modified so as to get a maximum cut off of 78 per cent. The air end is the Southwark gridiron valve controlled positively on the inlet side and opened in the same manner on the outlet side, but closed automatically by the air. The first of the four engines will be completed in the next two months and the others will be installed at short intervals following.

The Maryland Steel Company, with all its blast furnaces in operation, is no longer importing English hematite iron, as was the case in the summer and fall of 1905. The company has its rail order books filled for some months ahead, a portion of the tonnage being for export, but no important foreign business has come up recently.

An Engineering Business Opportunity in Africa.

Henry W. Peabody & Co., export and import commission merchants, 17 State street, New York, have received a letter from Meikle Bros., their correspondents at Gwelo, Rhodesia Africa, who state that an opening exists at that point for an engineering firm which could do repairs and supply the mines with mining and battery requisites. The letter further says:

"Gwelo is the most centrally situated town in Rhodesia, and has by far the best gold mining area round it. We are 550 miles from Beira Port, 188 miles from Salisbury and 113 miles from Bulawayo, and all the country for 100 miles right around is more or less gold bearing. Bulawayo was for a number of years the terminus of the Southern Railway, Gwelo being the inland town, and all the engineering firms doing business in South Africa opened offices and laid down stock at Bulawayo, thereby forcing all the mining community in the country to go to Bulawayo to do their business. Since the reduction of railroad rates from Beira, which has diverted most of the trade through that port, Gwelo is in a far better position to compete for the trade of the country than Bulawayo, and any enterprising firm starting here would in a few months capture most of the trade of the country, as it would have the advantage of about 3 shillings 6 pence per 100 pounds in railroad rates. We are surrounded by 11 gold belts on which there are 36 mining propositions working at present and which we hope to see doubled in the very near future. Our gold output up to very lately has been three-fourths of the output of Rhodesia. Besides the gold we have large deposits of chrome, iron and antimony to be worked very shortly, and a very promising diamond field has been discovered within 10 miles of the town, and the owners are to erect a pretty extensive plant, we understand, there next month."

The American Pig Iron Storage Warrant Company had on hand on January 31, 1906, 44,700 tons of pig iron, having received 2500 tons in January and delivered 15,000 tons, making the net reduction in warrant stocks in the month 12,500 tons.

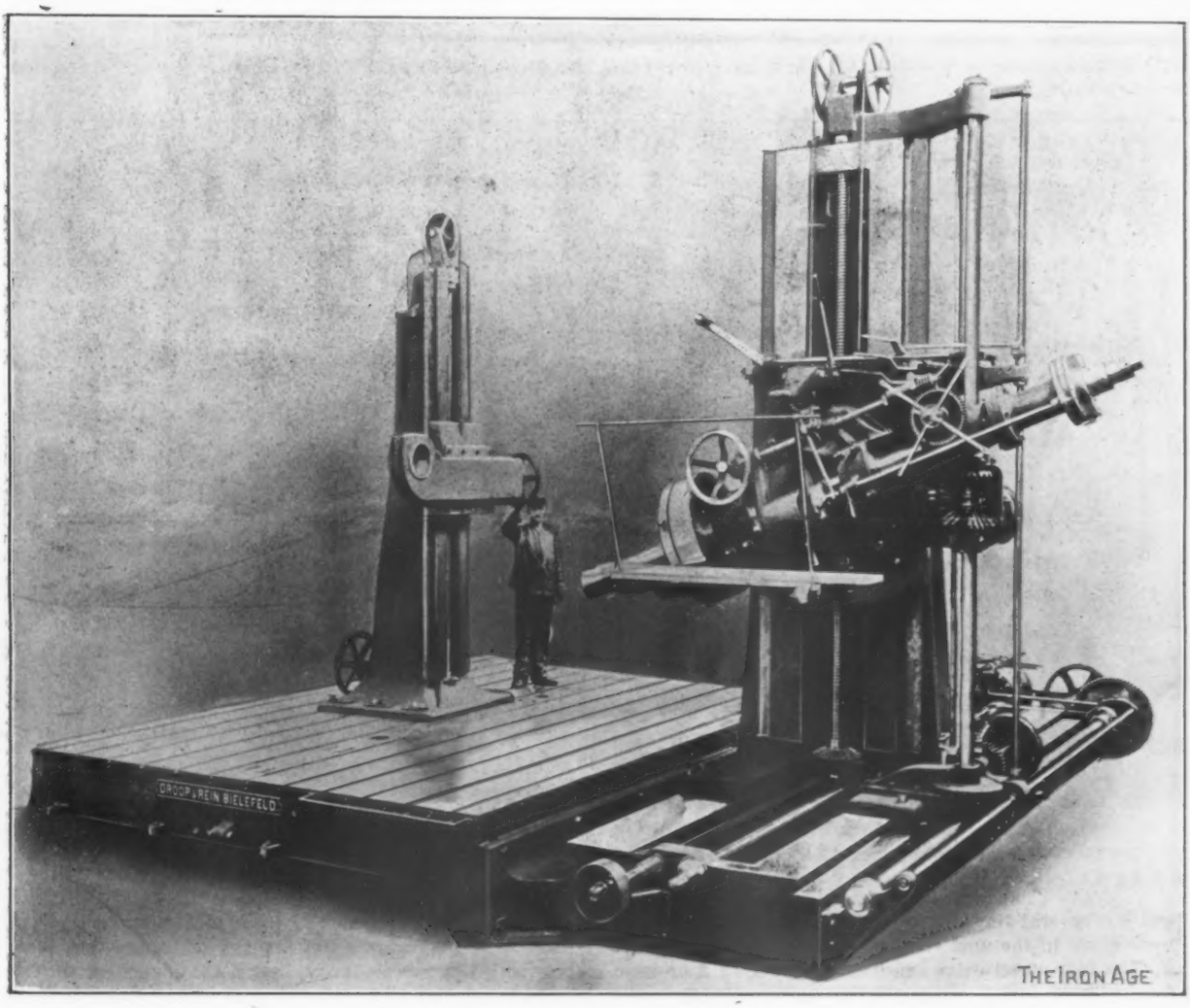
A Large German Armor Plate Boring and Milling Machine.

The machine illustrated is intended for armor plate work, particularly the boring and tapping of holes, and was built by Droop & Rein, Bielefeld, Germany. The operator's position is on a running board attached to the head, from which point he controls all adjustments and quick movements in either direction. The countershaft affords two speeds and the drive is through five-step pulleys and back gears, so that in connection with the quadruple gear changes on the spindle head and single or triple gearing a wide range of speeds is secured, from 1 to 80 turns per minute.

Power is transmitted to the main arbor by bevel gears and a vertical splined shaft at the side of the column. This shaft, through right and left running bevel gears, for forward and backward motion of the boring bar, drives a horizontal shaft attached to the arbor head slide, which does not participate in the swiveling of the arbor head, but operates a short shaft, carrying a spur gear, which meshes with the internal teeth on the large driving gear and is carried by the spindle sleeve. This sleeve has split bearings of phosphor bronze. The swiveling of the spindle head 30 degrees above and the same below the horizontal is effected by power by a worm wheel segment and worm, which latter can also be hand operated by a ratchet on the spindle head.

The boring arbor can be automatically fed by a ratchet wheel and pawl, at rates from 0.004 to 0.032 inch per turn and can also be rapidly withdrawn or set by hand. Starting the tap is facilitated by a screw templet in the rear end of the boring arbor having the same pitch as the tap and engaging in an adjustable split nut, which can be opened and closed by a lever. The slow setting of the column and the spindle head on the column, which is counterbalanced, is accomplished by a horizontal shaft having eight rates of speed in regular progression from 0.01 to 0.12 inch per turn of the boring arbor. The rapid setting of the column and of the boring head is obtained through a special countershaft at the rate of 59 inches per minute. Both the slow and fast motions are controlled from the operator's platform.

It is impossible to throw in both forward and backward motions or the horizontal and the vertical motions at once. These latter motions are also controlled from the operator's station. The reversing spindles are used simultaneously for rapid shifting. The entire shifting mechanism lies under the column. The boring arbor is of crucible steel and all high speed shafts have bronze boxes. The driving gears and those reversing gears which get the most wear are of cast or forged steel, and the pinions are of phosphor bronze with milled or planed teeth. The boring bar is 6.3 inches in diameter, has 59 inches axial movement and the spindle head can be adjusted 98.4 inches vertically.



A Large Boring and Milling Machine for Armor Plate, Built by Droop & Rein, Bielefeld, Germany.

A saving in coal of about 9 per cent., at a speed of between 19 and 20 knots, was computed for the turbine steamers belonging to the Midland Railway (England), as compared with similar steamers of the same company propelled by reciprocating engines. The principal inferiority of the turbine vessels seems to have consisted in a difficulty in maneuvring in narrow channels, which difficulty it is believed may be readily overcome by the expedient of putting more power into the turbines used for backing. The difference in weight of machinery and in initial cost was found to favor the turbine driven ships by margins of 6 and 1½ per cent., respectively.

The Four Wheel Drive Truck.

The new model four wheel drive truck made by the Four Wheel Drive Wagon Company, Milwaukee, Wis., is bevel gear driven to both front and rear axles, there being no chains employed, as in the first model. A similar machine to the one illustrated in Fig. 1 will travel 12 miles an hour. The cost of operating is said to run from $5 to $6 a day and it will do the work of from two to four teams, acording to the working conditions; the longer the distance and larger the loads the more economical is the machine comparatively.

The old chain driven truck has done some rather remarkable feats, among them climbing a 13½-inch curbing from a standstill with the wheels touching, carrying 5 tons through mud with all chains and sprockets dragging, carrying 6 tons through snow over 2 feet deep, pulling 44 tons behind it while carrying 8 tons itself up a 3 per cent. grade, and pushing a 5-ton load of cement block over a 5-inch curb and lot embankment. It will travel 7½ miles an hour on a good road, carrying 7 to 8 tons, and has several times been used to pull teams out which were stuck in the mud with heavy loads.

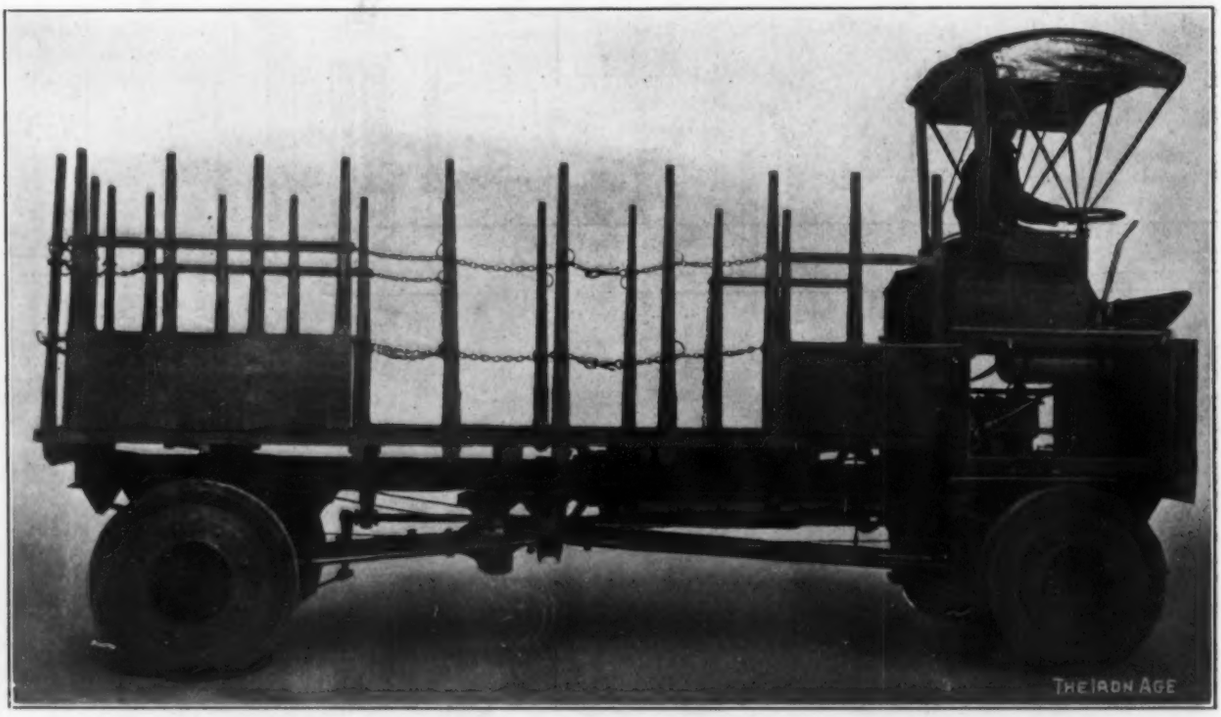


Fig. 1.—The New Model Four Wheel Drive Truck, Built by the Four Wheel Drive Wagon Company, Racine, Wis.

The four-wheel drive truck is driven by a four-cycle, four-cylinder, water cooled gasoline engine, directly under the driver's seat in front. Behind the engine, mounted with it on a three-point suspension frame, is the variable speed transmission gear, as shown in Fig. 2. The engine power is applied through the transmission gear to a shaft, which in turn, through large sprockets and a chain, drives the main propeller shaft. This propeller shaft is divided in the middle by a ball and socket joint, and through bevel pinions at the front and rear ends drives the corresponding sets of wheels. Three differentials balance the power and speed applied to the wheels; one on each axle and one on the rear driving shaft, near the ball and socket joint. A roller in the same plane as the propeller shaft takes up all thrust and lateral strain of the bevel gears. The propeller shaft is inclosed entirely by a casing continuous with that of each axle. A ball and socket joint in this casing covers a universal joint at the center of the propeller shaft, and an enlargement of this same casing incloses the main differential sprockets and chain.

All four wheels are steered by a horizontal shaft hung on bearings under the frame, terminating at its front end in a gear sector, which meshes with a worm on the steering column, the latter being operated by the ordinary steering wheel. Steering arms on each wheel are yoked with the arm on the opposite side, and this yoke is connected by toggles and arms to the steering shaft. Rotating this shaft turns the front pair of wheels to the right and the rear pair to the left, or *vise versa*, and with the same angle ratio. The rear wheels track perfectly with the front pair on any curve. A 25-degree angle permits the truck to turn in a circle of a radius of about its own length, which, with a 5-ton machine, is less space than is necessary for a small runabout to turn in.

The wheels, which are of the disk type, consist primarily of a series of wedge-shaped blocks, arranged radially about a malleable iron hub. They are held in place by bolts in the hub by an outer metal flange keyed to the hub and by shouldered retaining rings, which are shrunk on and bolted to them near the periphery on both inboard and outboard sides of the wheel. These blocks are of second growth rock elm, specially treated, and are claimed to far outlast any rubber tire. Between each wooden disk a steel plate of the width of the tread is driven in flush with the tread surface. In this way the life of the wheel is greatly increased and a better holding effect of the tread is secured. The wooden part of the wheel is built ready to slip over the hub and when a wheel is so worn that it is running upon a retaining ring the replacement is easily made.

The bearings which carry the wheels are ¾-inch balls in cones upon an oscillating or bearing ring, which is mounted on two vertical trunnions upon the forked end of the dead axle. These trunnions serve as pivots in allowing the wheel to be turned in steering and correspond to the spindle and steering knuckle universally used in automobile construction. All four wheels are driven by shafts running on roller bearings inside of the hollow dead axles. The shafts simply drive and carry the load.

At the outboard end of each is a universal joint of special design, embodying a self contained lubricating system. The outer fork of each universal joint ends in a squared stub, which fits in a square hole in the driving plate of the wheel. This plate is doweled and bolted to the outside of the hub.

The brakes are of the internal expanding type, drums for which are cast integral with the hub, thus relieving the universal joints of all strain consequent upon stopping

the truck suddenly. Accordion pleated rawhide shields between axle and hub prevent dust from entering the bearings or axle parts. The most important feature of this brake is that if any part of the driving shaft or propeller shaft breaks while ascending a grade the application of the brake direct to drums on the wheels precludes all possibility of running backward down hill.

The engine is of a standard design, well adapted for heavy service and amply powerful for any emergency. The four cylinders are cast separately with integral water jackets, through which a circulation is maintained by a gear pump driven by the crank shaft. The ignition is by Remy magnet and jump spark system. The circulating water is cooled by a radiator and two fans, driven by belt from the crank shaft. The cam shaft and valve gear are easily accessible through hand holes. The engine bearings are all extra long and are bronze bushed. The inlet and exhaust valves are interchangeable, mechanically operated and are on same sides of the cylinders.

The transmission gear is of a standard sliding gear

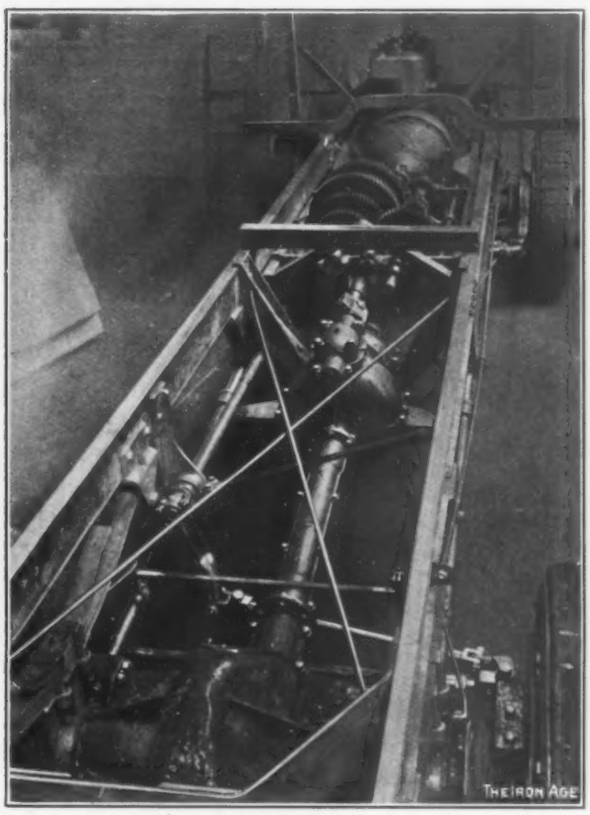


Fig. 2.—Underframe and Machinery of the Four Wheel Drive Truck.

type, giving three forward speeds and reverse. The universal joint connects its primary shaft to the crank shaft of the engine. By the three-point suspension perfect alignment is maintained in the chain speed gearing at all times, irrespective of the spring or twist which a truck frame may undergo.

The frame is of cold rolled ship channel, with the flanges outward. It is bent in one piece and braced at the four corners, insuring the necessary amount of stiffness at the angles, but allowing of flexibility between front and rear ends. Stiffness amidships is secured by bow-string trussing on each side of the frame.

Iron Ore in Wayne County, N. Y.—A company has been formed at Wolcott, N. Y., with a capitalization of $100,000 to develop iron ore deposits in Wayne County on property lying between the Rome, Watertown & Ogdensburg Railroad and the Lehigh Valley Railroad and a short distance from a good shipping point on Lake Ontario. On the property acquired by the company test shafts disclose deposits of ore from 3 to 5 feet in thickness and on 80 acres of the tract the average depth of the ore is only 15 feet from the surface, the stripping over the ore consisting of gravel and soft slate, which can be easily removed by steam shovel. Iron ore has been known to exist in the vicinity of Wolcott since 1820, and for nearly 40 years blast furnaces were operated there; but about 1862 the men who owned the property all died within one year and the business passed into inexperienced hands and failed, although the original owners amassed large wealth. The officers of the new corporation are: President, James P. Whipple, president of the State Game and Fish Commission; vice-president, W. H. Lyon, State Printer; treasurer, B. A. Davis, Deputy New York State Treasurer.

Drawback on Antifriction Metal.

WASHINGTON, D. C., February 7.—The Treasury Department has prepared an elaborate series of regulations for the allowance of drawback of duty paid on imported antifriction metal used in the manufacture of certain parts of locomotives. These regulations permit the use of imported materials in combination with domestic materials, as well as exclusively, in the manufacture of the parts referred to, and in this respect represent an advance in the direction of liberality in applying the drawback law. The regulations, which have been issued on the application of the Baldwin Locomotive Works, Philadelphia, Pa., provide for drawback of 99 per cent. of the duty paid on imported Dewrance antifriction metal subject to the following conditions in liquidation:

"In liquidation, the quantity of imported material actually appearing in the exported parts shall be taken as the basis for the allowance of drawback, which quantity, where said parts are manufactured partly from domestic material, may equal 80 per cent. of the imported material used in filling the castings, and where the parts are made wholly of imported material the net weight of the same in finished condition. In no case, however, shall the quantities of imported material upon which drawback may be allowed exceed those stated in the following table:

Filled with Dewrance Antifriction Metal.

	Pounds.
2 cross heads	24.80
4 eccentric straps	4.00
2 main driving box brasses	8.00
2 driving box brasses, front	8.00
2 driving box brasses, back	3.20
6 side rod bushings	7.20
8 tender brasses	12.00
4 truck brasses	8.00

Entirety of Dewrance Antifriction Metal.

2 steam chest glands	3.00
4 cylinder glands	7.00

"These regulations will be extended to other parts of locomotives if the manufacturers find it desirable to use the antifriction metal for such purpose, but in such case special schedules will be required to be filed showing the amount of imported metal used." W. L. C.

The James B. Oliver Estate.—The executors have filed in the courts at Pittsburgh an inventory of the late James B. Oliver's personal estate, showing a total of $5,142,366.92, divided as follows: Cash, $297,256.75; Allegheny Bridge Company stock, $8,250; Black Hills Copper Company, $4,800; Calumet & Pittsburgh Mining Company, $31,250; Calumet & Arizona Mining Company, $190,900; Hudson River Telephone Company, $8,000; Lake Superior & Pittsburgh Mining Company, $40,250; Oliver Iron & Steel Company, $2,650,500; United States Steel Corporation, preferred, $426,400; common, $473,100; Pittsburgh & Duluth Mining Company, $90,000; Crucible Steel Company, common, $9,880; North Butte Mining Company, $111,000; Junction Mining Company, $37,500; Pittsburgh Coal Company, common, $1,260; Leetsdale Ice Company, $1; International Construction Company, $16,750; Las Animas Mining & Milling Company, $1; Horse Shoe Bend Gold Mining Company, $1; Sewickley Heights Horse Show association, $1; bonds and mortgages, $163,004; notes and accounts due from various persons, $582,262.17.

E

A German Electric Bloom Shear.*

The drawings reproduced in Fig. 1 show the shear proper and the electric hydraulic driving machanism. The former has, in general, the same arrangement as a horizontal bloom shear with steam hydraulic driving.

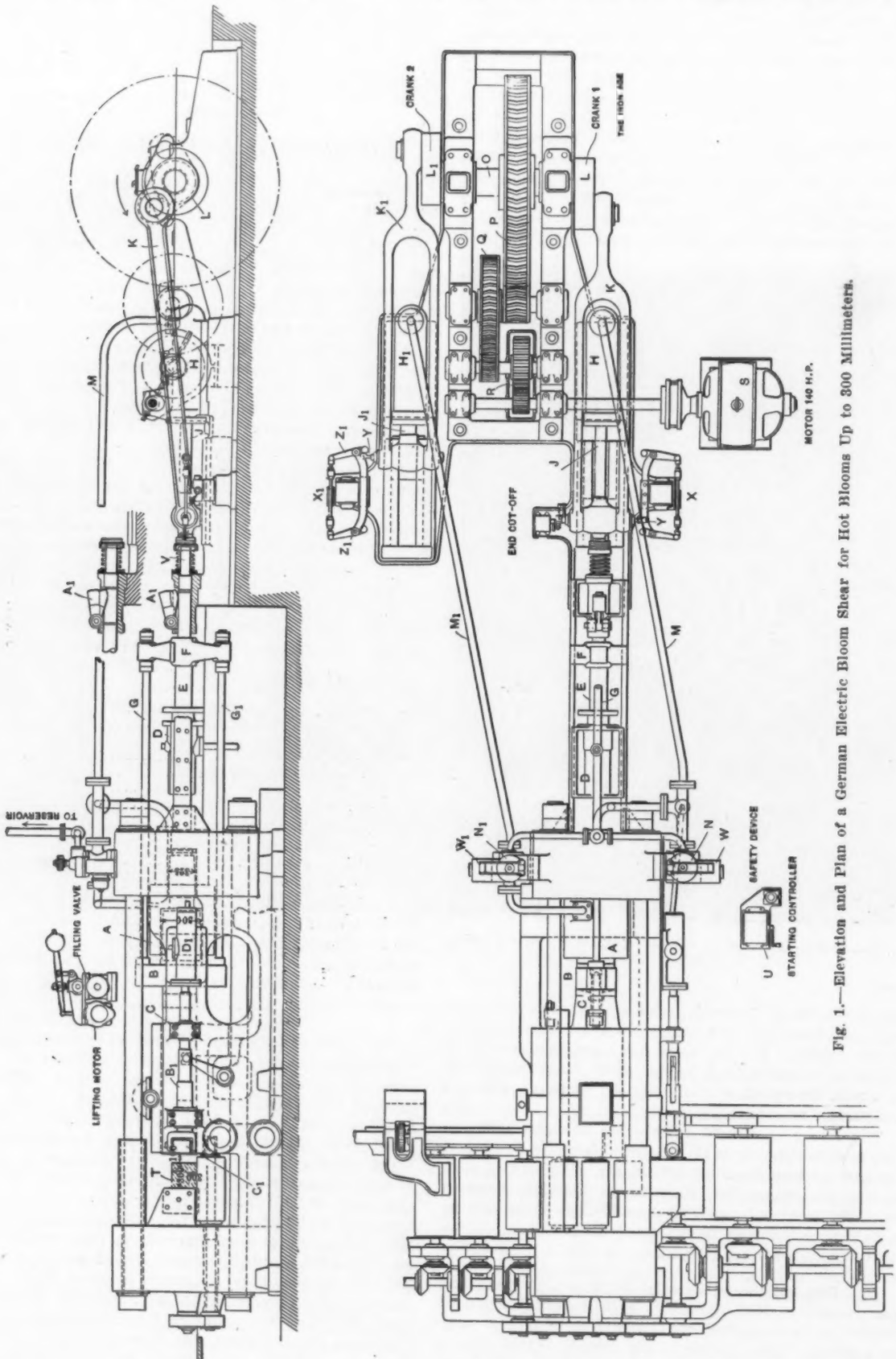


Fig. 1.—Elevation and Plan of a German Electric Bloom Shear for Hot Blooms Up to 300 Millimeters.

The plunger B in the cylinder A has two independent pressure surfaces, the object of which will be explained later. The return stroke of the knife carrier C is effected by the hydraulic cylinder D and plunger E, which are always under pressure and therefore do not consume any water. When the water is released from A, the plunger E, working through the cross head F and rods G and G_1, returns the knife carrier to its original position. The pressure necessary for the shearing cylinder A is generated in the pumps H and H_1, of which the plungers J and J_1 are driven by a motor, working through the gearing shown. These pumps are connected by the pipes M and M_1, respectively, to separate chambers of A, so that H and H_1 are independent of each other. In M and M_1 are automatic valves N and N_1, which act before and after each cut, connecting cylinder and pumps with the cistern.

* Abstract of article by A. Schwarze of Dortmund in *Stahl und Eisen.*

The two cranks L and L_1 are fixed on the shaft O about 125 degrees apart. The plungers J and J_1 have different areas and the cranks are so set that the smaller plunger is in the lead. Before the cutting stroke begins,

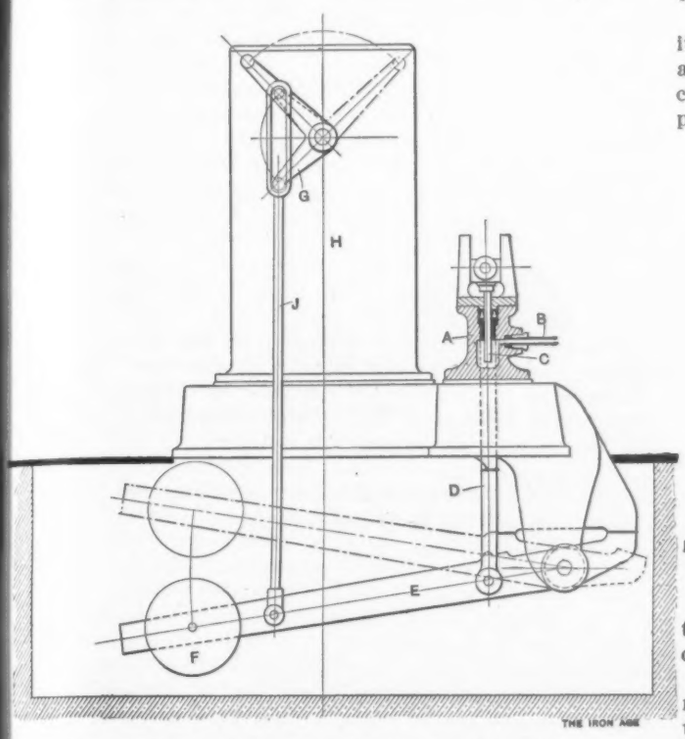


Fig. 2.—Safety Device Operating the Starting Controller of a German Electric Bloom Shear.

the moving knife is about 4 inches from the maximum sized bloom T; the crank L, with the smaller plunger J, being at a corresponding angle behind the dead center, while L_1 and the larger plunger, J_1, are about 125 degrees still further back.

The motor S having been started by the controller U, the crank L by means of the connecting rod K and intermediate piece V, moves the knife carrier up to the bloom. During this period both pressure chambers of the cylinder A and also the two pump cylinders, H and H_1, are connected with the cistern, so that all are freed from air and filled with water. When the crank L passes its left hand dead center, the corresponding valve N shuts and the actual cut begins. At this point the connection between the cistern on the one hand, the pump H and one pressure chamber of A on the other, is severed.

When the crank L_1, with the larger plunger J_1, reaches its left hand dead center, the valve N_1 shuts off this side also and the larger plunger J_1 takes over the work of cutting the bloom. This occurs shortly after the smaller plunger J has reached its other dead center, at which

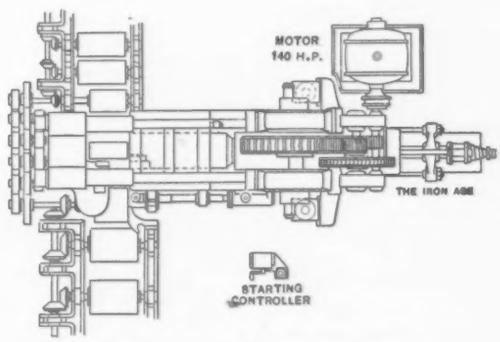


Fig. 4.—Plan of an Arrangement Having Some Advantages Over that Shown in Fig. 1.

time the valve N opens, again connecting the cylinder chambers and pump on this side with the cistern.

The cut being finished, that is, when the crank L_1 has reached its right hand dead center, the pump cylinder on this side, as well as the corresponding part of the shearing cylinder, is also connected to the cistern and the motor is stopped automatically. As a result the knife carrier is at once rapidly returned to its starting point by the cylinder D. The valves N and N_1 are opened and shut by compressed air and the electro magnets W and W_1, which are put into operation by the switches X and X_1, the latter being actuated by the projecting piece Y of the crosshead. The function of the magnets is simply to compress a spring on the valves whereby they are released and a fracture of any part of the machine by the same sticking is avoided.

If the cistern is placed 50 or 60 feet above the level of the shear, all the pressure chambers will have a pressure of 25 or 30 pounds per square inch before the cut begins and a corresponding loss of stroke necessary to attain this pressure will be avoided. The remaining loss of working stroke, due to raising the pressure from 30 pounds to that needed for shearing, may be regarded as small, as the shear knife forces itself into the hot metal

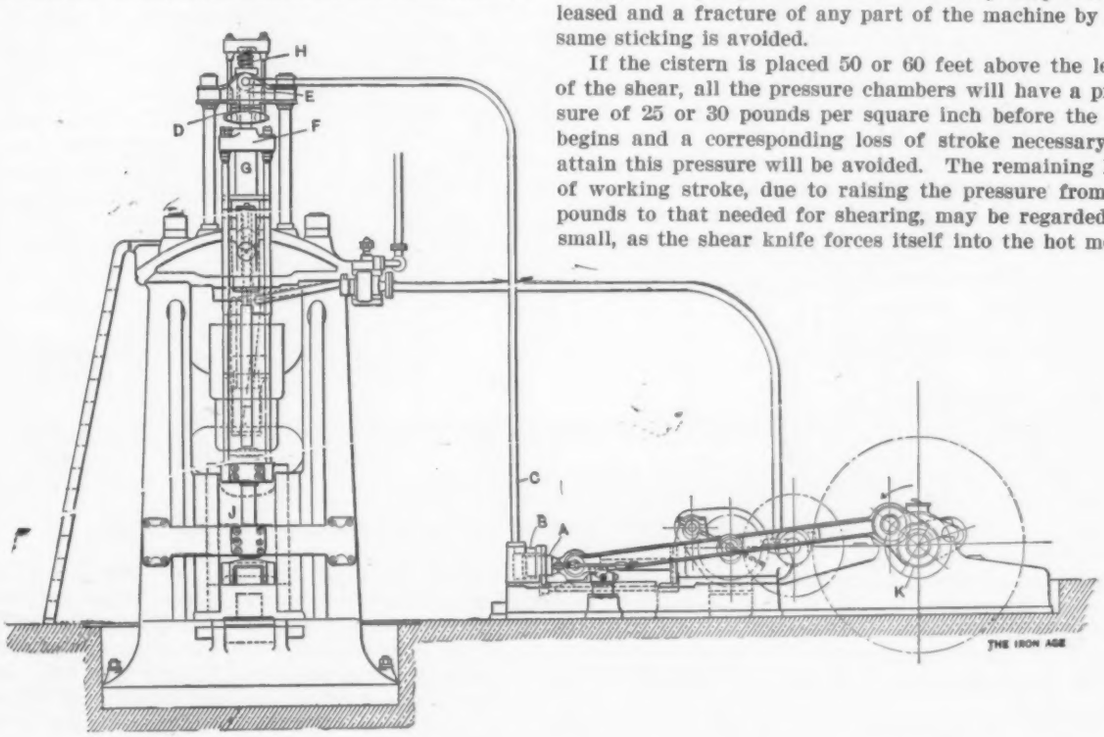


Fig. 3.—A German Vertical Bloom Shear with Electric Hydraulic Driving Mechanism.

at a considerably lower pressure than 6000 pounds. The stoppage of the motor S on the completion of the cut is also effected by means of a cut out. In front of the distance piece V is a catch A_1 which, in case the knife carrier has not quite completed its return stroke before

the motor is stopped, stops the latter and the gearing exactly in its original position.

Should a bloom which has become too cold be put into the shear, the latter is stopped automatically by means of a safety device operating the starting controller. This device, shown in Fig. 2, consists of a small hydraulic cylinder A, connected by the pipe B to the working cylinder of the shear, and a plunger C, which is weighted through the rod D and lever E with the

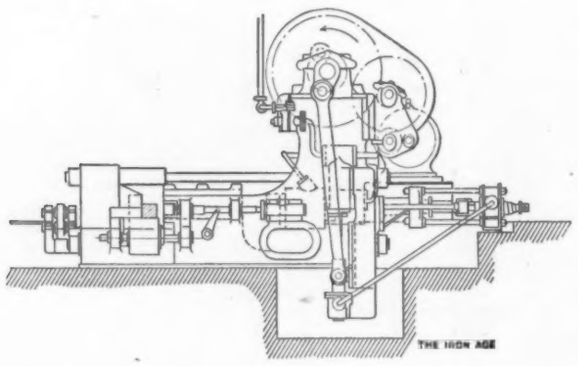


Fig. 5.—Elevation of Shear of Which Plan Is Shown in Fig. 4.

weight F. This latter is so arranged that when the shear knife encounters an excessive resistance, the resulting increased pressure is sufficient to raise the plunger C and with it the lever G of the starting controller. As the material to be cut will always yield a little, a too sudden stoppage of the moving parts is not to be feared. A small back water valve, situated in the bed plate of the shear. The plunger D, by means of the crosshead F, presses the knife down to the bloom, overcoming the constant pressure on the return stroke plunger G. The spring H then forces D and A back to their original positions. At the highest point of the pipe C is a small non-return valve of about 0.4-inch diameter, connected to the cistern. The ball in the valve opens inward to the pipe C and has a movement of 0.08 to 0.12 inch, so that it closes easily under pressure, but otherwise is open, in order to keep all water chambers filled. When the knife touches the bloom, that is, when the crank K has reached its original dead center, the valve L shuts and shearing begins. The rest of the operation is precisely the same as with the horizontal shear.

For vertical shears with each knife, movable by means of a separate hydraulic cylinder, the upper of which brings the knife into position against the bloom and holds it there while it is sheared by the lower, both plungers are under constant return stroke pressure. This is overcome in the upper knife cylinder by cylinder B of the driving mechanism, while the power cylinders H H_1 do the same for the lower knife cylinder.

Another arrangement which, in regard to compactness, simplicity and cheapness has advantages over the horizontal shear first described, is that shown in Figs. 4 and 5. The crank shaft is above the shear and the two vertical pumps at the sides. The movement down to the bloom is the same as in the first described machine.

The advantages of shears of this type over other electrically driven shears are as follows: At the beginning of the cut, when the bloom offers the greatest resistance, the motor has its lightest load. The inequalities of the load are more evenly transmitted to the motor, thus permitting the latter to be smaller, and for the same reason the gearing need be but half the strength

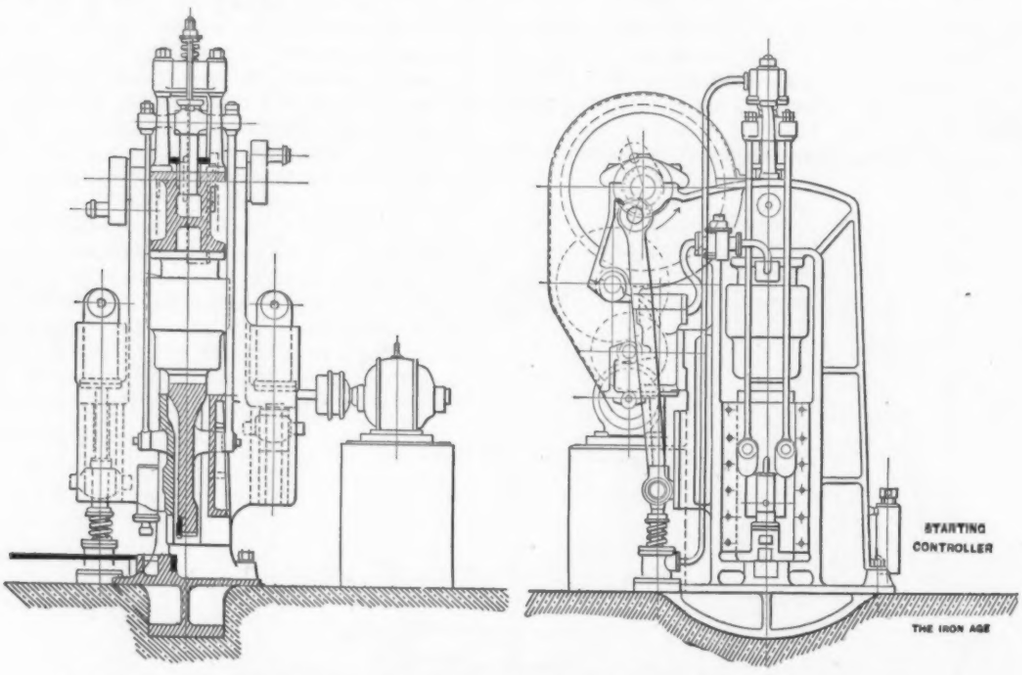


Fig. 6.—A German Cold Shear with Electric Hydraulic Drive for Blooms Up to 160 Millimeters.

controller, enables the shearsman to move the knife. The holding down piece B_1, Fig. 1, with the roller C, serves to keep the piece in position while being cut. It is operated by the cylinder D, which receives its pressure from the same source and at the same time as the shearing cylinder A.

With a vertical arrangement of the shears the power is transmitted from motor to knife head in the same manner as described above, only the movement down to the bloom before actual shearing commences is effected differently. Fig. 3 shows a vertical shear and its electric hydraulic driving mechanism. The knife is forced down to the bloom directly by the motor, acting through the gearing and the plunger A, producing pressure in the cylinder B, which pressure is transmitted through the pipe C to the plunger D in the cylinder E on top of the

required in the older type. The heavy moving parts being absent the even distribution of the work results in much quieter working. The handling is simpler than that of any other type of shear, consisting only of moving the controller lever, which can be done by a boy. Fractures due to cold steel are avoided entirely, as the motor is stopped immediately the prescribed pressure is exceeded. Other advantages are the quick return stroke of the knife carrier and the fact that no electrical brake is required to stop the motor.

As compared with steam hydraulic shears, the new type possesses advantages which consist principally in a saving of power, easier replacement of parts and lower cost of handling. The amount of power is proportional to the area sheared and there is no loss, as when steam is used, from large waste room, condensation, &c.

Small leaks do not materially influence the amount of power used, as is the case with the steam hydraulic type. Furthermore, warming up the cylinder and removing condensation water after stoppages are not necessary. The sudden movement of the steam piston, causing sudden strains and leaks in the packing and other hydraulic parts, is replaced by the easy motion of the pumps.

Fig. 6 shows a cold shear of the new type for blooms up to 6 inches square. The pressure on the teeth of the main gear of 84 inches diameter is 66,000 pounds. For a direct acting vertical electric shear this would amount to 160,000 pounds on a gear of the same size, and in the case of slabs might be as high as 198,000 pounds. If these slabs were sheared on edge instead of flat, the maximum pressure would be somewhat lower, but would act on a shorter length of the upper knife, putting the latter under a considerably greater strain. Furthermore, in the case of the direct driven machine, the necessity for a much greater throw of the eccentric would have to be taken into consideration, so that in this case it would be immaterial if the slab were sheared flat or on edge.

New York State as a Producer and Consumer of Pig Iron.

An interesting feature of the statistics of pig iron production in 1905, as given in the February 8 issue of *The Iron Age*, is the marked increase in the output of pig iron in New York State. For 1905 the total (including charcoal iron) was 1,198,068 gross tons, as compared with 605,709 tons in 1904, 552,917 tons in 1903, 401.369 tons in 1902 and 283,662 tons in 1901. The production last year was thus in excess of that for 1904 and 1903 put together, three times that for 1902 and four times that for 1901. The five completed furnaces of the Lackawanna Steel Company at Buffalo are of course responsible for a lage part of the increase of the past three years, but the production of 1905 shows more than a doubling of the merchant iron output of New York since 1901. This is attributable to the important additions to merchant furnace capacity in the Buffalo district, furnaces in other parts of the State showing practically no increase in production in several years, the improvements and increased outputs in one direction being offset by the stopping of other furnaces that have come to the point where large outlays would be necessary if they kept on. Going back to 1893, when Furnace A of the Buffalo Union Furnace Company was blown in, the coke and anthracite pig iron output in New York State as given below reflects the additions to furnace capacities in and about Buffalo. In the later nineties the increase of Buffalo really offset losses elsewhere. The figures represent gross tons:

Coke and Anthracite Pig Iron Production in New York.

1893	184,705	1898	221,411	1902	367,162
1894	167,477	1899	257,226	1903	520,541
1895	176,482	1900	284,927	1904	575,805
1896	200,875	1901	261,057	1905	1,197,064
1897	237,924				

One fact shown by the statistics of 1905 is that the manufacture of charcoal iron in New York, which had been 30,000 to 35,000 tons a year for a number of years, has practically ceased, the amount reported last year being 1004 tons. The additions to furnace capacity in the Buffalo district, following the starting of Buffalo Furnace A in 1893, have been as follows: Niagara Furnace B, in 1896; Buffalo Furnace B, in 1899; Buffalo Furnace C, in 1901; Lackawanna Furnaces 1 and 2, in 1903; Lackawanna Furnaces 3 and 4 and Buffalo & Susquehanna Furnace A, in 1904; Lackawanna Furnace 5 and Buffalo & Susquehanna Furnace B, in 1905.

Expanding Demand in Tributary Territory.

While there have been times when Buffalo pig iron has been the leading factor in New England, even to the exclusion of iron from other districts which consider New England a part of their legitimate territory, the foundry trade of Buffalo and of the foundry centers of New York State have furnished the backbone of the demand for the pig iron made in that district. It is interesting to note, therefore, that the consumption of pig iron in the districts naturally drawing their supplies from Buffalo is expanding at a rapid rate and promises to increase very considerably in the coming year. This development will be received with satisfaction by pig iron interests in Eastern Pennsylvania and Virginia, as well as in Alabama, which have found Buffalo iron an uncomfortable competitor in New York City and New England. With the completion of the $100,000,000 campaign of expenditure on the Erie Canal a further advantage will be given Buffalo furnaces in Eastern and New England markets, but the need of taking advantage of it will be lessened by these expanding foundry operations nearer home. Without attempting a complete catalogue of the new foundry capacity recently completed or about to be undertaken in New York State we append some data concerning a number of the more important extensions:

The United States Cast Iron Pipe & Foundry Company has had its Buffalo works shut down throughout the past year while extensive improvements have been under way, which have recently been completed. The output will now be about 30,000 tons a year and the consumption of pig iron in 1906 will all represent a demand upon the blast furnaces which did not exist in 1905.

The important additions planned for the foundry department of the Goulds Mfg. Company, Seneca Falls, N. Y., and to be erected in the present year, will increase considerably its melt of pig iron, making the amount drawn from the Buffalo district about 50 tons a day, or an increase of nearly 50 per cent. over its present consumption of iron from that district.

A foundry for fittings and other castings, which the Utica Pipe & Foundry Company, Utica, N. Y., has been building, is expected to start up by the end of February, and will consume about 15 tons of pig iron a day. The same company has begun work on a new plant for cast iron water and gas pipe, which will be in operation in about four months time and will consume 200 tons of iron a day.

An extension of 140 feet to the main foundry of the General Electric Company at Schenectady, N. Y., has been under way, with a view to relieving the congested condition of the foundry and enabling the company to produce with greater convenience and economy. Whatever increase in pig iron consumption results will be incidental to these gains.

The Acme Steel & Malleable Iron Works, Buffalo, expects to build in March a large addition to its plant. The former capacity was 5000 tons a year, 300 men being employed. On the completion of the new buildings at least 550 employees will be given place and the consumption of iron will be increased to at least 10,000 tons.

The new foundry of the Gleason Works, Rochester, N. Y., was completed recently and the melting of iron began this month, the output being 12 tons a day additional. In this connection mention should be made of the Genesee Furnace at Charlotte, near Rochester, the output of which will also be a factor in supplying the increasing consumption of foundry iron in New York State.

The Gould Coupler Company, Depew, N. Y., is doubling its output of steel castings by the building of two new open hearth furnaces of 20 tons capacity. The production can thus be increased by about 30,000 tons a year.

The Buffalo Forge Company, Buffalo, N. Y., on the completion of its new foundry, 200 x 200 feet, will consume from 20 to 30 tons of pig iron a day more than at present. A similar increase in the output of the Buffalo Steam Pump Company will be possible, on the completion of the foundry addition it has had under way recently.

The Baker & Shevlin Company, Saratoga Springs, N. Y., builder of pulp paper making machinery, is building a foundry addition, 40 feet by 108 feet, which will increase its pig iron requirements about 20 per cent.

The United States Radiator Company of Dunkirk, N. Y., has plans afoot for new construction that will add very considerably to its consumption of pig iron.

At Dunkirk, N. Y., the Brooks works of the American Locomotive Company are being increased by the building of a foundry 125 x 650 feet. This will mean a very large consumption of pig iron beyond the present melt. At the

Schenectady works of the American Locomotive Company it is expected a large steel foundry will be erected, though definite plans have not yet been announced.

It is understood that the Buffalo Co-operative Stove Company, Buffalo, is planning to make a considerable addition to its capacity the coming spring.

George H. Thacher & Co. of Albany, manufacturers of car wheels, are about occupying an addition to their plant which enlarges their melting capacity considerably.

The Otis Elevator Company has a 35-acre tract of land at Buffalo and has made plans for large works. The first two buildings to be erected will be 100 x 350 feet each. The company will probably be melting iron within the year and ultimately the Buffalo works will be large consumers of pig iron.

Several hundred tons of basic iron a day will be melted at the plant of the New York State Steel Company, now under erection at Buffalo. The ultimate plans of this company call for the erection of blast furnaces, but for the present a steel plant only will be built.

The Threatened Coal Strike.

BY FREDERICK E. SAWARD.

It should not be forgotten that the meeting at Indianapolis was nothing more than a joint convention of the bituminous coal operators and of bituminous coal miners delegates from the four States—Pennsylvania, Ohio, Indiana and Illinois—or what is known as the interstate (or competitive) district. It had nothing at all to do with the anthracite matter in any way, shape or form, and yet since then we are told that all districts, so far as work is concerned, must stand or fall together. Surely there is no reason for this, and when the anthracite miners' delegates, as authorized by the Shamokin convention, meet with the representatives of the operators on the 15th instant the insincerity of any such proposition will be a prominent feature and a good argument from the operators' point of view.

Dissension in the Miners' Ranks.

The miners' union seems to be in mixed condition at the present time; there is dissension within its ranks which bodes no good to it. This is both personal, as against certain of the officers, and general, in that the Southwestern and Western coal mining States are not affiliated with the United Mine Workers of America. Whatever else may be said in all the talk and in all the newspaper articles that may be written, it cannot be gainsaid that the relations are not at all harmonious. The language used during the discussion of the Dolan episode at Pittsburgh fully proves this statement.

There has been a lot of peace talk during the past six months by the labor leaders. At the Joint Scale Committee meeting President Mitchell's public utterances projected something like a threat or a menace. "Why shouldn't the mine workers enjoy their share of the general prosperity?" he asked. "Must the miners stop now? Have they no future?" This can mean only one thing—that on top of the prosperity now admittedly enjoyed by these miners they are about to push for a still further advantage; that they are going to make their future secure by forcing new conditions ahead of their natural development. Coming from this source, it appears to forecast demands that the operators cannot consistently grant. The alternative would be the weapon commonly employed by organized labor.

Miners' Wages Practically Double the Past Few Years.

F. L. Robbins, president of the Pittsburgh Coal Company, the largest producer in the United States, said he wanted to go on record before the close of a movement with which he had been connected many years. He said the joint conference had practically doubled the wages of the miners and greatly improved their condition in and out of the mines. He said the operators in making their two propositions—first, to base a settlement on the selling price of coal now and two years ago, and, second, to renew the present scale—had done all they could do. Yet all that labor could reply to this was that they wanted their share of the prosperity; they had it in anticipation when the agreement was made in 1904.

The whole soft coal trade, dealer and consumer alike, knows very well that the prices during 1904 and 1905 were not profitable to the producer; that the slight reduction in the wages basis made in 1904, as against 1903, was not sufficient. That reduction was small for the reason that the boom had not yet subsided that came from the anthracite stoppage of 1902. P. H. Penna, secretary of the Indiana operators' organization, says the production in Indiana fell off 7 to 9 per cent. during the last year. "I dislike to see a disruption," he said, "but if it does come, and we go into industrial conflict, the responsibility does not rest on the operators. The men who own the mines will control them, and a strike will only result in that being made a fact."

If the officers of the United Mine Workers decide to levy the proposed assessment of $1 a week on the members, will the operators be expected to collect the assessment through the usual check-off? If so, will they do it? One operator said: "It would be a nervy proposition to ask us to collect the $2,500,000 fund that the miners propose to fight us with. We shall probably tell them that a strike assessment is not rightfully included in the check-off."

Bituminous Coal Would Be Made Free of Duty.

Attention is also called to another point of importance which is appreciated not only by the bituminous operators, but by the intelligent leaders among the miners themselves. This is that in case of a great tie up of the bituminous mines the suffering of the public would probably compel Congress at once to take off the duty on imports of bituminous coal. If this were done it might prove extremely difficult to restore it in the future, and free coal, it is admitted, would be a permanent detriment to the bituminous industry.

Throughout the country a strike on the part of the bituminous miners would mean the practical stoppage of railroad and manufacturing industries, and throughout the Southern, Middle and Western States would mean the stoppage of fuel for domestic purposes.

The Anthracite Situation Not Hopeless.

Although the demands of the miners on the anthracite operators have not yet been officially formulated, unofficial statements indicate that there are not likely to be irreconcilable differences between the employers and the employed. No demand will be made for an increase in wages, and some of the other matters do not look impossible of agreement. For one thing, the eight-hour day is a mere phrase. At the last conference the operators stated that if the miners would work an average of eight hours a day they would quite willingly agree to the eight-hour demand. As a matter of fact the miners now do not work an average of eight hours. Their laborers do and so do many company men, and their term of day's work was fixed at nine hours, as against ten by the commission of 1903. One representative of the anthracite interests says: "The great 1902 anthracite strike was settled by means of arbitration. The same recourse could be resorted to this year if the anthracite miners were to stand alone. But if the majority of them are impressed with the necessity of joining issues with the bituminous men in order that the defeat of the latter may not mean a staggering blow to the whole miners' union, a settlement of the anthracite grievances by means of arbitration would be almost out of the question."

Prominent coal operators are expressing the opinion that a general strike will be averted. They call attention to the fact that in the bituminous fields, particularly in West Virginia and pretty much all along the lines of the Chesapeake & Ohio and the Norfolk & Western and the Baltimore & Ohio railroads, to the extent of about two-thirds of their bituminous tonnage the operators are in no way controlled by the United Mine Workers. In case of a strike in the Western bituminous district, and even in the anthracite district, the opinion is strongly expressed that the territory covered by the Chesapeake & Ohio, the Norfolk & Western and the Baltimore & Ohio railroads would really be benefited as to its bituminous business.

Small Stocks of Coal Held.

There is not any large amount of coal on hand, either bituminous or anthracite, with producers or in first hands. The anthracite companies have possibly 5,000,000 tons at their usual places of storage, mainly small coal of the steam sizes. If it becomes certain that a strike will take place the coal companies can increase this amount in storage rapidly, as, owing to the steady output and the unusually mild winter, the dealers are well stocked and there is not a brisk demand for coal. The mine workers cannot strike until April 1 without breaking their agreement, something the union has never done.

As showing the points of use of anthracite coal it is interesting to note the following percentages of the 60,000,000 gross tons shipped last year:

Destination.	Per cent.
Pennsylvania, New York and New Jersey	66.75
New England States	14.34
Southern States	3.58
Western States	11.44
Pacific Coast	0.01
Dominion of Canada	3.82
Foreign ports	0.06
Total	100.00

Mr. Mitchell secured an amendment to the resolution at Indianapolis so as to "include every district under the jurisdiction of the United Mine Workers, whether anthracite, bituminous or block coal regions in the United States and Canada." Under this amendment he has succeeded in accomplishing his plan to unify the organization and workings of the bituminous and anthracite union miners, even though the Indianapolis convention voted against it. His authority is under the grant of general powers to his committee to conduct the strike operations. The proposition of Mr. Mitchell is bold and undisguised. He evidently does not intend to allow a fuel digger in the United States to work unless he can make terms for all of them.

Here we are threatened with what in all its essential results is a general strike for the benefit of only one industry and at the instance of a small group of leaders. There is little wonder that both sides are content to let this threat work on the public for two months. Peace may be expected, for such machinery of industrial warfare is getting too destructive to use. It is reaching a stage analogous to that often predicted of the enginery of military warfare.

The Warwick Iron & Steel Company.

The annual report of the Warwick Iron & Steel Company, Pottstown, Pa., presents the following financial statement for the year ending December 31, 1905:

Assets.

Real estate and equipment account		$1,735,979.38
Pig iron on hand—467 tons at $15.75		7,355.25
General stock at furnaces (duplicate parts of machinery, &c.)		21,447.71
Bills receivable—notes for pig iron		17,356.87
Cash in bank		126,363.55
Iron making materials on hand		330,604.61
Accounts receivable—shipments of pig iron		366,973.86
Total		$2,606,081.23

Liabilities.

Capital stock		$1,456,715.00
Mortgage bonds		255,000.00
Profit and loss account:		
Balance January 1, 1905	$285,821.49	
Sundry debit items, including doubtful accounts	1,343.90	
	$284,477.59	
Less improvements and betterments	34,581.76	
		249,895.83
Pig iron account:		
Earnings for the year, after deducting usual charges	$170,493.29	
Less interest on bonds and borrowed money	22,820.88	
Net earnings after deducting all charges		147,672.41
Relining account—amount reserved for repairing furnaces		40,669.93
Bills payable		271,125.00
Accounts payable for book accounts for December		185,003.06
Total		$2,606,081.23

The Year's Operations.

The operations for 1905 show total gross earnings		$221,940.42
Deductions:		
Repairs to No. 1 furnace	$10,777.20	
Reserved—relining account, as per balance sheet	40,669.93	
	$51,447.13	
Interest paid on bonds and loans	22,820.88	
		74,268.01
Net earnings as per balance sheet		$147,672.41

President Edgar S. Cook makes the following statement regarding the work of the year:

"The total product of pig iron for 1905 was 205,788½ tons. No. 1 furnace was put out of blast June 16, owing to the brick lining melting away and endangering the iron shell. It was not again blown in until August, as the demand for iron and the prices obtainable offered no particular incentive. The cost of relining was provided for out of the credit to relining account. No. 2 furnace was operated continuously through the year, with only temporary stoppages absolutely necessary, aggregating a total of seven days. The total product of No. 2 furnace was 163,155 tons, or an average of 3137.6 tons per week. The largest monthly product was 14,796 tons and the largest weekly product 3851 tons.

"The year 1905 was characterized by unusual uniformity. The falling off in demand and the lowering of prices for iron, June to September, while serious in view of the small margin of profits per ton of iron, fortunately was of short duration. The advance, commencing with October, was opportune and helpful.

"Contracts have been entered into for the construction of a bridge connecting our present slag bank with the farm owned by our company, on the opposite side of the Schuylkill River. This bridge will bring into market a large acreage not required by the company, which will be available for sale for manufacturing sites.

"The plant has been maintained at the same high standard as heretofore, and the cost of converting raw materials into pig iron is probably lower than at any other blast furnace plant in this district. It is the policy of the management to continue to install the most modern equipment, so as to maintain the plant at its highest efficiency.

"The net earnings for the year amount to $147,672.41, equivalent to an average of 71 7-10 cents per ton on the entire product of the furnaces.

"During the year $15,000 of the bonds have been retired, leaving the outstanding issue of bonds $255,000.

"It will be observed that the earnings for the past year are equivalent to a trifle over 10 per cent. on the capital stock of the company. The directors have not thought it advisable to declare a dividend out of these profits, deeming it best for the interests of the stockholders that an adequate working capital should be accumulated so as to enable the company to make its purchases to the best advantage, and to avoid the possibility of embarrassment in the event of adverse conditions in the money market. The directors, however, have not been indifferent to the natural desire for dividends on the part of the stockholders, and it is hoped that should the present favorable conditions continue, which now seems more than probable, within a reasonable time the payment of moderate dividends may be resumed. Such a result has been the aim of the directors and seems likely of fulfillment. The working capital of the company is now approximately $400,000. A larger sum would be desirable, and the continuance of the present era of prosperity would bring this about."

The annual meeting of the stockholders will be held February 20.

The Israel Brothers Iron & Metal Company, Dayton, Ohio, has been incorporated under the laws of Ohio, with a capitalization of $75,000, to conduct a business in old material. The incorporators are Benjamin Israel, Herman Israel, Max Israel, Sol Flatau of Dayton and W. B. Israel of Chicago. The new company is a consolidation of the interests of Israel Brothers and Benjamin Israel, the latter being the father of the members of the former firm of Israel Brothers. A large tract of land on Dutoit street, skirting the Pennsylvania Railroad, will be transformed into the yards of the company.

The Diamond Turret Attachment.

The device illustrated is intended for use on single spindle drill presses, boring machines and lathes to render them capable of several operations without changing tools, and is made by the Detroit Power Specialty Company, Detroit, Mich. It saves the time ordinarily lost in changing drills and handling work several times for different sized holes. In a sense it may be considered to convert a single spindle machine into a gang drill, although it has an advantage over a gang drill in that every tool may be brought to one common position, so that a job clamped to the table or a heavy piece on which a series of operations is required need not be shifted in location. Fig. 1 is a perspective and Fig. 2 a section of the device.

The attachment consists of two parts, one of which is loosely mounted on a spindle having a tapered or straight shank to fit in the tool socket of the machine, while the other revolves on the first part and carries four spindle sockets, each having a Morse taper hole to receive tools. The handle shown on the side engages a latch locking the two parts together when one of the tools is in action. The other tools remain stationary and as the clutch mechanism and locking pin are operated simultaneously it is impossible to start a tool until it is in perfect alignment. In changing from one tool to another it is only necessary to release the latch and clutch mechanism by an upward pressure on the handle and revolve the required tool into position.

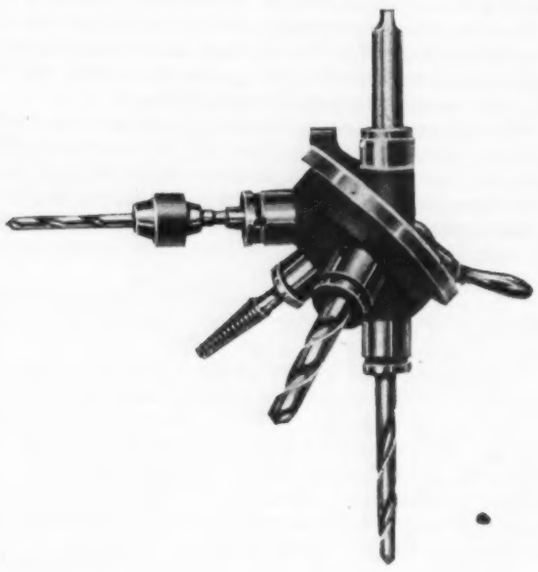


Fig. 1.—The Diamond Turret Attachment for Drills and Lathes.

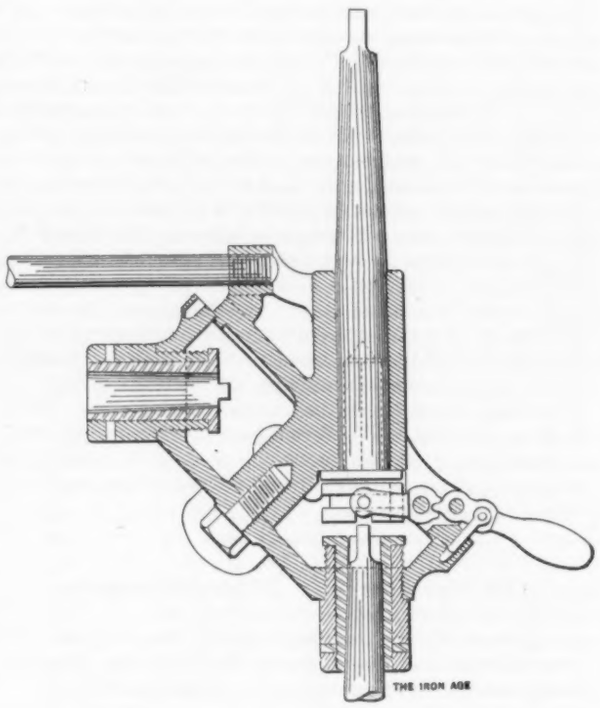


Fig. 2.—Section of the Diamond Turret Attachment.

Drilling and tapping are the functions for which the device is particularly adapted. It is so constructed that it responds at once to the reverse motion of the machine. An ordinary lathe, with the shank of the attachment inserted in the tail stock spindle, becomes a turret lathe and is capable of the operations usually performed on such a machine, including drilling, reaming, boring, tapping and turning. For special operations the same forms of special tools as are used in turret lathes are required.

The true function of the engineer is not only to determine how physical problems may be solved, but also how they may be solved most economically. By the very nature of his vocation the engineer is an economist. His function is to design structures and machines so that they are safe and fully operative; so that they entail as little constructive expense as is consistent with other features of the problem; and so with the expense of operation, the cost of repairs, as shown by the monthly record and the expense measured by enforced idleness on account of damage caused by accidents, may be the lowest possible.

Canadian Rail Mills and Canadian Demand

The *Canadian Manufacturer* answers some statements made in the Toronto *Globe* concerning the ability of Canadian rail mills to supply the demand for rails in that country. The *Globe* figures that 500,000 tons of rails will be required to lay the track of the Grand Trunk Pacific Railway from Moncton, N. B., to the Pacific Coast, a distance of about 4000 miles. It estimates that the mill at Sault Ste. Marie, Ont., and that at Sydney, N. S., would together average 500 tons of rails a day, and that at that rate it would take three years and four months of steady operation to turn out the rails needed for the Grand Trunk Pacific. And at that not a ton of rails could be rolled for any other road, though the Canadian Pacific requires an average of 40,000 tons of rails for renewals every year and the Grand Trunk 25,000 tons, making 100,000 tons a year a fair estimate for all Canadian roads.

In reply the *Canadian Manufacturer* prints letters from the officials of the two steel companies. The Dominion Iron & Steel Company reports that it is now producing rails at the rate of 500 to 550 tons per day and that its capacity is 1000 tons a day, but this is not reached because the rails could not be sold. The statement adds that the Grand Trunk Pacific could not possibly lay all the rails required in its construction in less than five years and that Canadian mills cannot only supply rails for all roads that are being built in Canada but also all needed rails for renewals. The general sales agent for the Algoma Steel Company, Sault Ste. Marie, writes that for some time the average output of his company's rail mill has not been less than 500 tons a day, running up to 640 tons in one day and to 555 tons in another. The capacity, it is stated, will be 1000 tons a day before long, the time depending upon the completion of the blast furnace now in process of erection.

The Executive Committee of the Buckeye Steel Casting Company, Columbus, Ohio, is working on a plan of reorganization of the company. It is probable that the capital, which is now $1,000,000, will be raised to $2,500,000, divided into $1,000,000 preferred and $1,500,000 common, with $500,000 held in the treasury. The company owns two large plants and is paying 10 per cent. dividends, though last year it earned almost 30 per cent.

The Youngstown Steam Trap.

A steam trap of unique construction, for which the claim is made that it is extremely simple in operation, is made by the Youngstown Steam Trap Company, Keystone Bank Building, Pittsburgh, Pa. In the accompanying engravings are shown a view of the parts of the trap unassembled in Fig. 1 and longitudinal and cross sections in Figs. 2 and 3, illustrating the principles upon which it operates. During the time that the trap is accumulating water of condensation it stands as shown in Fig. 2, and when the predetermined quantity has been received the ball end of the trap descends to the position shown in Fig. 1 and the trap discharges.

The condensation is received through the hollow trunnion U, Fig. 3, and passes into the receiver through ports R and P. While the receiver is filling the trap rests on the arm G, Fig. 2, and when full rocks until it rests on I, and the water is discharged through the curved pipe C and out through the other hollow trunnion J. When the trap tips the ball valve L, shown in the cross sectional view, moves off from the port M, allowing the water to pass from the discharge pipe C into and out through the pipe J. When the trap is about to discharge and before it reaches a horizontal position the ball F, shown in the longitudinal section, rolls to the opposite end of its retaining tube and hastens the descent of the receiver and allows it to remain long enough to discharge practically all of its contents. When the water has been discharged the receiver end becomes the lighter one and the trap rocks back to its original position and the ball F returns toward the end E of the trap. If a sudden gush of water should occur the trap remains in a discharging position and takes care of the sudden accumulation of water. It is stated that by virtue of the shifting balance a trap of this form of 1-inch size will handle as much water as a 1½-inch trap of other design. The rolling weight has the effect of dampening the oscillations of the trap, for without it it would be almost continuously in motion.

If the trap is placed slightly above the water line of the boilers it will return the water directly to the boilers. The trap operates without any wire drawing effect through the ball valve, because the valve is moved entirely off its seat when the trap swings into its discharging position, and any mud, scale or foreign matter which may be in the water is blown through the large discharge opening. At the same time the seat of the ball valve will be cleaned before the trap returns to its filling position. Another advantage of the ball valve is that at successive operations it returns to its seat at a different point on its circumference, hence the wear is uniform and the ball tends to retain its spherical form. If it should be necessary the ball valve can be taken out by removing the flange N. The valve avoids such troubles as may occur

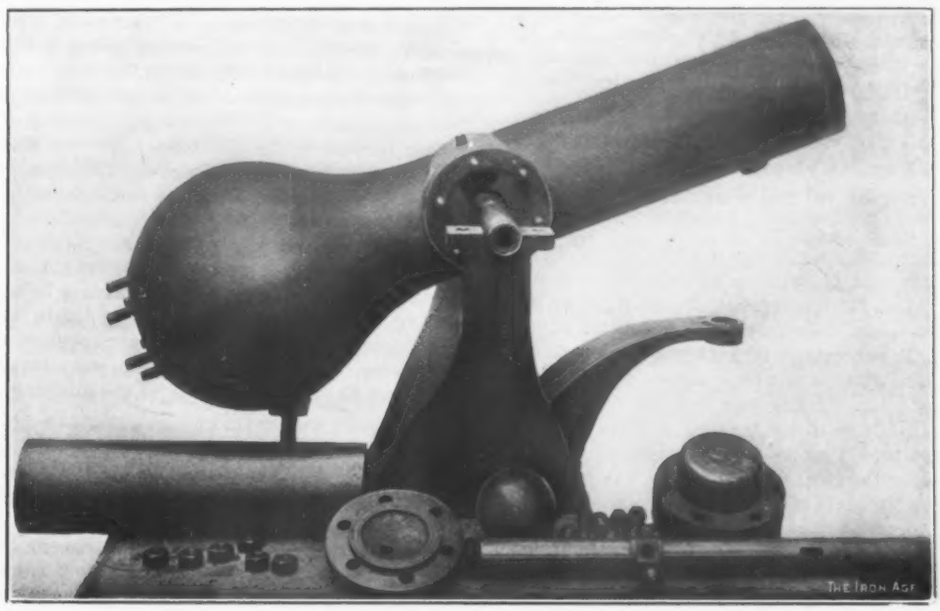


Fig. 1.—Steam Trap Made by the Youngstown Steam Trap Company, Pittsburgh, Pa., with the Parts Shown Unassembled.

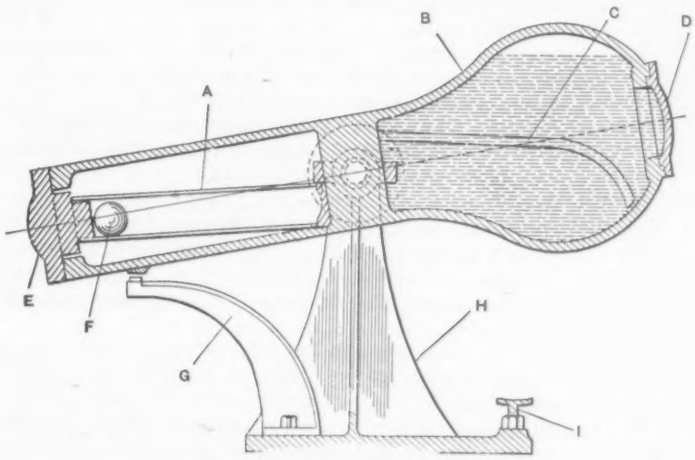


Fig. 2.—Longitudinal Section.

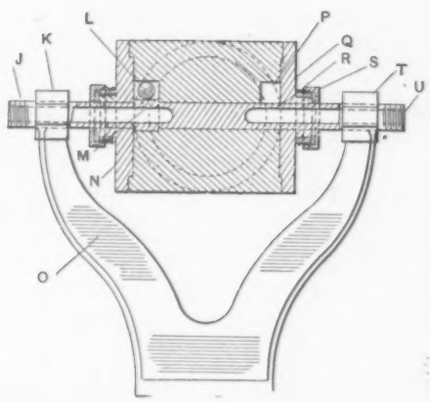


Fig. 3.—Cross Section.

THE YOUNGSTOWN STEAM TRAP.

with valve stem packing and has little if any tendency to leak. The stuffing boxes on the side flanges N and Q are the only parts of the trap that require packing. Traps which have been in constant use for over a year working under pressures of 150 pounds, it is stated, have not required repacking.

The traps are tested to 300 pounds steam pressure and are guaranteed to work satisfactorily under any pressure from 2 to 250 pounds. A special construction is not required for different pressures. Any part of the trap can be easily removed and the whole trap may be taken apart and put together again in a very short time. A noticeable point to be commended in the trap is the absence of pins, floats, small levers and valve disks. The movement the trap makes when operating gives constant evidence as to whether or not it is performing its function.

Important Results from the Use of Ferrosilicon in the Foundry

The February number of the *Journal* of the Franklin Institute, Philadelphia, contains an interesting communication from Alex. E. Outerbridge, Jr., of William Sellers & Co., Philadelphia, concerning the beneficial effects of adding a small percentage of high-grade ferrosilicon to molten cast iron after it has been tapped from the cupola into the ladle. Mr. Outerbridge first referred to his experiments in this line in the opening address he made as Franklin Institute Professor of Metallurgy before the Mining and Metallurgical Section. This was published in the December number of the *Journal*. His discoveries were made in connection with an attempt to solve the problem of obtaining economically from one melting in a cupola a number of grades of iron suitable for different classes of castings requiring diverse qualities of metal. He believed, as the result of his experiments, it would be possible to alter at will the silicon in any individual ladle to a nicety. As the result of a large number of experiments made with test bars of foundry iron treated in the ladle with small quantities of ferrosilicon containing 50 per cent. silicon, the additions ranging from ¼ to 1 per cent. of the weight of the iron, Mr. Outerbridge had found an average gain in strength of about 15 per cent. and a somewhat larger average gain in ductility or bending quality, accompanied by a marked increase in softness of the metal. The silicon in untreated samples ranged from 1.7 to 2.25 per cent., and in the treated specimens from 2 to 2.75 per cent. The addition of even so little as one pound of the alloy in powdered form in a ladle containing 200 pounds of foundry iron, produced a remarkable effect not only as a softener but invariably increased the strength and resilience of the metal, this occuring with an addition of a little less than 0.25 per cent. of silicon to the iron. By adding four times this amount of the alloy to a very hard iron mixture in a ladle, which ran quite white when cast in thin section, and was therefore entirely unsuitable for small castings requiring to be machined, it was found that a soft gray metal of good strength and ductility was produced, having a low shrinkage and being suitable for casting pulleys and other light work,

Mr. Outerbridge anticipates that with a lowering in the cost of ferrosilicon, as is to be expected, the method will become of great value through its general adoption in foundry work; but even at the present price of the powdered alloy, about 4 cents a pound, the cost of the small addition of high-grade ferrosilicon is trifling and is much more than counterbalanced by the fact that lower grades of pig iron may be used. This value is apart from the ability to control the product absolutely and to vary the character of the metal in regard to softness or machining quality, and at the same time increasing the strength and ductility of individual ladles of iron drawn from one common source.

Increased Strength Through Silicon Additions.

In his communication to the February *Journal* Mr. Outerbridge reproduces a letter from Dr. Richard Moldenke, secretary of the American Foundrymen's Association, in which the latter refers to the method of adding high-grade silicon in the ladle as entirely new, and adds: "You will no doubt find that the increase in strength, where the reverse would be expected when softening, is due to the purifying effect of the silicon addition when not made in the cupola. This is similar to that produced by ferromanganese when added to car-wheel mixtures. I hold that these alloys, when they are effective at all, do take out dissolved oxygen or perhaps other gases, bringing out silicon or manganese, as the case may be, and passing into the slag. The result is a cleaning up and better adherence of the crystals, raising the resilience and general strength. I think you will find further that where steel additions have been made, you will get still better results, as the melting point being raised these alloys get in their work better."

Mr. Outerbridge adds to the data presented in his original address the following: "Small pulleys cast from iron treated in the way I described are now being turned at 40 feet per minute, whereas the usual speed of turning the same class of pulleys from the same grade of soft iron untreated is 25 feet per minute. I stated in my paper that as a result of a large number of tests I had found an average increase in strength of about 15 per cent. accompanied by marked increase in softness. I now have records showing much larger gain in strength and resilience (over 25 per cent.) accompanied by remarkable increase in softness. These tests were cast from iron containing 15 per cent. of steel in the mixture."

New Westinghouse Electric Fans.

For 1906 the Westinghouse Electric & Mfg. Company presents a largely increased assortment of electric fans. They are made for both direct and alternating current service and in forms known as desk, bracket, ceiling, floor column and counter types. The fan blades are a departure from former designs, constructed upon exact mathematical lines, with theoretically correct angles, to give an even breeze across the entire face of the fan and not project a hollow cone of air, which is found in all fans having incorrectly designed blades. The determination of this correct blade angle has resulted in high air delivery, while the total watt consumption has been decreased. The motor is mounted upon trunnions and is secured in any position by two thumb screws. The motor consumes a small amount of energy. It costs only about three-quarters as much to run a 12-inch fan as to run an ordinary 16 candle-power incandescent lamp on the same circuit, while a 16-inch fan can be operated at less than the cost of burning two such lamps. By means of a simple adapter the desk and bracket types are interchangeable.

The motor used in the alternating current desk and bracket fans is of the induction type, wound for either 110 or 220 volts and for 7200 or 16,000 alternations per minute. The alternating current fan starts as readily at slow as at high speeds. A centrifugal device cuts out the starting winding as soon as the fan has obtained sufficient speed and a large amount of energy is saved which would otherwise be wasted. The direct current motor is completely inclosed, but an easily removable dust shield makes inspection possible. There are two bearings provided with an automatic oil return, which insures abundant lubrication at every point and prevents throwing of the oil.

The fans for ceiling and floor mounting are made with four blades, which are set at angles to give the highest movement of air for the lowest consumption of energy. They are made for either alternating current, 60-cycle or direct current. Counter type fans are similar to those designed for floor column mounting, with the exception that the shaft is shorter.

It is stated that the net earnings of the Crucible Steel Company of America in January were $298,000, the largest for any one month in the history of the company. It is expected that another dividend will be declared in March or April, but the rate has not been given out.

Power Developments Above Niagara Falls.

NIAGARA FALLS, N. Y., February 8, 1906.—The Hamilton Electric Light & Cataract Power Company, whose hydroelectric development is at De Cew Falls, near St. Catharines, Ont., has just installed two Westinghouse 6400-kw. three-phase 2400-volt generators, that are rated at 286 revolutions per minute. These machines are directly connected to water wheels of 7100 horse-power capacity made by J. M. Voith, Heidenheim, Germany, each machine having its individual turbine. Last year the Westinghouse Company installed two 5000-kw., three-phase, 2200-volt generators in this station. These are also rated at 286 revolutions per minute and are directly connected to Voith wheels. The Westinghouse Company has also installed nine 3400-kw. 2200-volt to 45,000-volt transformers, equipped with the latest type C oil switches, and three motor generator sets of 100 kw. used as exciters. The station is further equipped with two Stilwell-Bierce turbines, rated at 1700 horse-power and 400 revolutions per minute, to which are connected two Royal electric inductor alternators of 1000 kw. There are also two other wheels, of A. Riva, Manneret, make, each of 3300 horsepower, and to these are connected alternators of 2000 kw. capacity.

The greater part of the power generated in this power house is transmitted to Hamilton, which is about 35 miles distant from the station. There are three transmission lines connecting Hamilton with the station, one of them being of aluminum, the other two of copper. In Hamilton the power is used for the operation of electric car lines and for lighting and power purposes, several large factories having excellent motor equipments. St. Catharines, Ont., is also supplied with power, and some of the current is devoted to the lighting of the Welland Canal, which waterway is lighted its entire length. The transmission to Hamilton is made at a voltage of 40,000.

There is much that is very interesting in the De Cew Falls development. The power house is a low brick building, 60 x 208 feet. The power house is located at the foot of the Niagara escarpment, about 3½ miles from St. Catharines. The water supply is taken from large reservoirs on top of the escarpment, the reservoirs receiving their water from the old and new Welland canals. The reservoirs cover about 450 acres and are estimated to contain 50,000,000 cubic feet of water. The water for the operation of the wheels in the station is conveyed through steel pipes that have an inside diameter of 6½ feet and are wood covered on the outside. These pipes are five in number and extend down the surface of the escarpment, making small angles with the horizontal for a short distance, as they conform to a natural shelf of the escarpment. At the power house the pipes pass under the main floor to the water wheels arranged in a row along the more distant side. In the station the wheels and generators are all in the same room. The Twelve Mile Creek serves as a tailrace for the discharged water. It may be remarked that the aluminum transmission line follows the low level to Hamilton, while the two copper lines run along the top of the escarpment.

It is possible that this development at De Cew Falls gives an intimation of other power developments likely to be made between Lake Erie and Lake Ontario should the Government of the United States act jointly with the Government of the Dominion of Canada in preventing further diversion of water at Niagara Falls for power purposes. This De Cew Falls development has been very successful, and the service rendered is most efficient, so that there is no uncertainty about the practicability of the plan of development. The transmission of power for a distance of 35 miles is longer than that made from Niagara Falls. There are two franchises in existence in New York State that permit of a somewhat similar development on the American side by diverting water from the upper Niagara and carrying it by a surface canal to the Niagara escarpment on the New York side of the Niagara River. One of these franchises is held by the Niagara County Irrigation & Water Supply Company and the other by the Niagara, Lockport & Ontario Power Company. The scheme of the first company is to build a canal that would divert the Niagara River water to the brow of the mountain near Lewiston, while the project of the other company calls for its diversion to a point near Lockport.

On the Canadian side of the river the Dominion Government has granted four franchises that call for developments very similar to that at De Cew Falls, but their sources of water supply are slightly different. Extending from the Niagara River, a few miles above the Horseshoe Fall, on the Canadian side, is Chippewa Creek, a small stream dignified also by the title of Welland River. To tap this creek at its inner end and make it run backward from the river is planned by two of the companies that have franchises. One of these is the Welland-Niagara Power Company, and it would build a canal from Chippewa Creek 7 miles across country to the Niagara escarpment below Thorold, locating its power house at the foot of the mountain. The Erie & Welland Power Company plans to tap Chippewa Creek and run its canal to Jordan, Ont., and there develop power. The Lake Erie & Ontario Power Company plans to tap Lake Erie and run a canal across to Jordan, while a fourth Canadian company would use the Grand River in getting water from Lake Erie, building a canal from the Grand River at Dunnville to Grimsby and there effect a power development.

A very notable circumstance in connection with the charters of these four Canadian companies is that, although their proposed power developments have to do with the Province of Ontario, they were granted by the Dominion Government, whereas all of the franchises for power development on the Canadian side at Niagara Falls have been granted by the commissioners of Victoria Park and approved by the Government of Ontario. A general belief prevails, supported by statements of Victoria Park commissioners, that the Dominion Government has no right to give away power rights in the Province of Ontario unless the Government of the province agrees therewith. It is known that the Dominion Government will consult with Ontario before entering into any agreement with the United States for the protection of the scenic spectacle of the Falls of Niagara.

Workingmen's Insurance and Employers' Liability.—The Bureau of Labor of the Department of Commerce and Labor, Washington, D. C., is preparing a report covering the various systems of workingmen's insurance and employers' liability, both in this country and abroad. The report will cover insurance against sickness, accident, disability, old age, death and unemployment. In this connection it is endeavoring to secure information concerning the existence in the United States of what are usually known as establishment funds—that is, mutual relief or insurance funds organized and maintained by the employees of an industrial establishment, or relief funds supported either wholly or in part by the employers themselves. It is desired to obtain, wherever possible, copies of constitutions, rules and by-laws, blank certificate forms and any other matter relating to funds of this character. Chas. P. Neill, commissioner, requests that persons possessing data of any kind relative to the existence of establishment funds in this country communicate with him at their earliest convenience.

Electricity has been tried with some success in tanning, to accelerate the process. One method consists in passing current through hides contained within a revolving drum partially filled with the tanning solution. A current of ten amperes is passed under a pressure of 70 volts between plates projecting radially from the axle within the drum acting as electrodes. By this process large hides were completely tanned in five or six days. The result was similar to that obtained by the ordinary method, but the surface was more brittle. The hides play the part of porous electrodes within which gas, liberated by electrolysis, inflates the hides and facilitates the absorption of the tanning solution. The rapidity of the action is attributed to the continual agitation of the hides, with the presence in the solution of certain salts affected by the current.

The Blaisdell Self Oiling Air Compressor.

The air compressor illustrated herewith is the latest type brought out by the Blaisdell Machinery Company, Bradford, Pa. Aside from the question of efficiency, the chief objects in view have been compactness and accessibility in machines having capacity of 1000 to 3000 feet. The machine is of the inclosed self oiling type, as has been manufactured by this company for the last seven

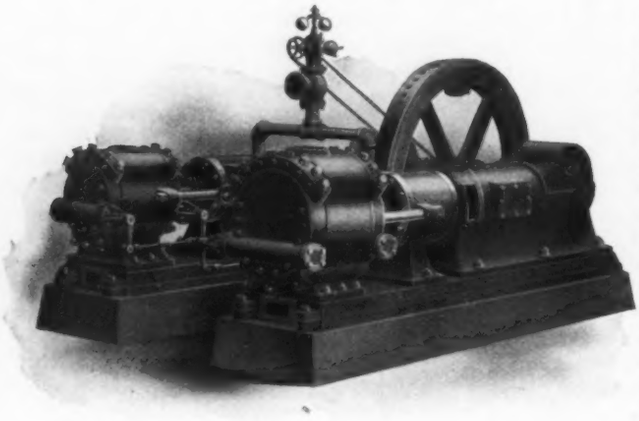


Fig. 1.—The Blaisdell Self Oiling Air Compressor, Built by the Blaisdell Machinery Company, Bradford, Pa.

years. Fig. 1 is a perspective and Fig. 2 a sectional view.

The lubrication is carried on by the action of the crank disks, which, as shown in Fig. 2, dip into the crank case containing a heavy lubricating oil and by the aid of deflector plates distribute the oil in sufficient quantities to the main bearings, crank and cross head pin, slides, &c. The oil, after passing through the bearings, returns to the crank case by gravity to be used over again. This method of lubrication does away with some 12 or 15 lubricators on the duplex machines. To keep any exhaust steam from the steam cylinder stuffing boxes entering the oil a separate partition plate with auxiliary stuffing boxes is provided, thus directing the drip in a separate chamber, where it may be drawn off after coming in contact with the oil.

The frames are of massive design, providing a foundation bearing throughout their length. The cross head guides are of the bored type and are tied to the bearing housing by a massive section laid out along the line of strain. Absolute alignment is secured by boring and facing the frames at the same operation. The main bearings are of the quarter box construction, with heavy interlocking bearing cap. The quarter boxes are adjustable by cast iron wedges having a full bearing on them and adjustable by screws. The cross heads are of cast steel, with adjustable shoes.

The steam cylinders have balanced valves, with the Meyer adjustable cut off. The wheel operating this cut off is mounted on a stationary bracket and does not travel with the valve stem, which is somewhat of a departure from the old style Meyer gear. The valves are operated by eccentrics through rigid rocker arms. The air cylinders are provided with positively operated Corliss inlet valves. The discharge valves are of the vertical lift poppet type. The jacket system of the cylinder is entirely separate from that of the head, obviating the annoying troubles when the jackets are connected by cored passages and intervening gaskets. The gaskets on this machine are of male and female form and cannot blow out.

The shaft proper is of open hearth steel, operating with large fillets. These disks are of cast iron, with heavy counterweights cast integrally. These disks are forced on the shaft by hydraulic pressure and securely keyed, making the shaft practically one piece. The connecting rods are of open hearth steel, of the solid end type, no straps being used. The boxes are of phosphor bronze.

The whole machine is mounted on a substantial subbase, making it self contained and absolutely rigid. All the working parts are readily accessible and easily adjusted and the crank pins and all working parts are of generous proportions, designed to meet the severest duty in this line of work. The machine illustrated is built in duplex, compound and cross compound types, in capacities from 200 to 2500 feet per minute.

Electricity for lighting and power is being rapidly introduced into the larger of the Philippine towns and many private shops in Manila, besides those operated by various branches of the government, are putting in machinery driven directly by electric motors. Surveys have been made with an idea to utilizing water power from an excellent source in an adjoining province, it being the intention to transmit electricity into the city from the station to be erected at the foot of the falls. Other water power abounds in various parts of the islands and all that seems to be required for its extensive utilization is capital for making a start and getting the plants into running order.

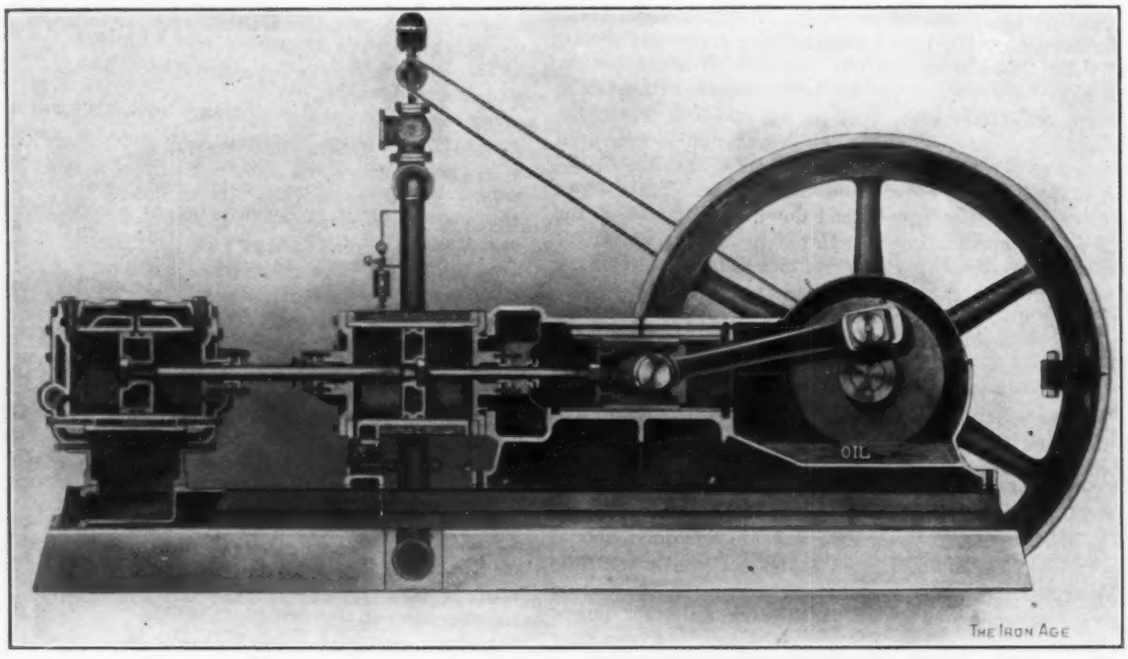


Fig. 2.—Sectional View of the Blaisdell Self Oiling Air Compressor.

Foundry Practice.*

BY WILLIAM A. BOLE.

It is of great importance for any man in any calling to have a certain repetitive experience which we call specialization, and it is almost equally important to have a fair fund of collateral knowledge, in order to supplement the first sort. This will increase his reasoning powers and make him a more active student of cause and effect. The foundryman can very well afford to know some other things besides the daily round of his duties, and I believe that foundrymen nowadays are, as a rule, inquisitive, studious men, who are doing their best to increase their fund of knowledge. Not all men are built this way, however; I remember once having a very competent machinist ask if wrought iron was made out of cast iron, or if cast iron was made out of wrought iron, and how it was done?

Engineers Paying Closer Attention to Foundry Methods.

The present day aids to the foundryman are much greater and more extensive than they were some years ago. Engineers are paying closer attention to foundry methods, assisting the foundryman where they are able to do so and tending to make his work easier and more sure. Formerly there used to be a distaste for foundry details and many a design has been made where the engineer in charge spent much time and labor in going over his drawings, his engineering calculations and his preliminary estimates, but as for the carrying out of the foundry work depended wholly upon the empirical experience of his foundry foreman, trusting entirely to the judgment of the latter for every move in the carrying out of the work, never going near the foundry himself.

When things are run in such a fashion there is a tendency for the foundry foreman, having things left entirely in his own hands, to become narrow in his views and despotic in his judgment, but to-day we are better off because we have among foundrymen, by virtue of their associations, such as this, an opportunity for interchange of views, which tends to better things.

The Advent of Steel Castings Has Broadened Foundrymen's Views.

I think, too, that the advent of the steel casting has had something to do with this change; it has always seemed that people engaged in the steel business have been a sort of a brotherhood, willing and anxious to exchange views and to help the other fellow out of a tight place, and this spirit, added to the additional field for the use of the reasoning powers, has tended to make the iron foundry business less of a sealed book than formerly.

There is no possible doubt as to the value of discussions in regard to foundry matters by people who have any experience with the subject, and we, all of us, ought to be of a mind open to conviction and without too much heed for consistency with our past views. A great philosopher and writer of our own time has said that "inconsistency is the terror of feeble minds." If we were wrong in our thinking last year, let us put consistency overboard and be right in our thinking this year, if possible.

In the conduct of the iron foundry with which I have been connected for some years I have endeavored to induce as much reasoning and thinking among the foremen as possible, and in order to have some nucleus, or nest egg, around which to gather reflections, I prepared a little treatise some years ago which I called our "foundry primer," some extracts from which I propose to read for your consideration.

It is more or less beyond dispute that for every sort of defect in iron castings more than one opinion can be advanced as to the reason, and in complicated cases there are likely to be as many reasons as there are persons. There are many circumstances which can conspire to produce bad results in foundry practice and there is practically only one way to produce good results, which is by having every feature of our practice perfected. The difference between what will produce a good casting and what has produced a bad one is often small, and it is therefore important that no consideration connected with molding or pouring castings should be considered too small to be worthy of the foundryman's consideration.

Qualities of Pig Iron.

The bulk of iron which must be employed in foundry practice in this vicinity is made in western Pennsylvania and eastern Ohio, and is very similar in quality and characteristics. These irons are made from ores brought from the Lake Superior regions and smelted by coke from the Connellsville region. The difference between irons thus made from the same ore and by the use of the same fuel is more or less accidental, modified of course in some respects by the grade of each brand and the purpose for which it is sold. The truth is that any furnace is likely at any time to make iron differing in chemical composition from its regular iron, and it is therefore unsafe to depend upon the reputation for uniformity or upon any one familiar brand, since it may at any time change in quality enough to produce bad results.

It seems safer to employ several brands of iron, any one of which is good as a rule, and in case of default in any one brand of iron the others of its own class will tend to neutralize and hold in check the unfortunate tendencies of such change. Therefore we have made a practice of dealing with about a dozen furnaces making iron of this class, and endeavor to keep on hand at all times not less than five or six of these brands, all of which we consider on a practical equality.

Southern Irons.

The irons produced south of the Ohio River, and generally known by the designation of Southern irons, are usually higher in phosphorus than the Northern irons, and generally regarded as weaker on this account and softer. They are often bought as neutralizers of the Northern irons; in other words, their tendencies are such as to correct the tendencies of Lake Superior irons, and it is generally regarded as judicious to use a certain percentage of Southern iron as a good counterirritant of any tendency on the part of the Northern irons.

An iron in general is classed as neutral when it is free from any particular tendency to do bad, and an iron might be called, instead of neutral, by some other convenient name, such as "safe," "dependable" or "reliable," in contradiction to such terms as "shrinky," "weak," "cold short," etc.

Charcoal Irons.

The use of charcoal iron in blast furnaces is in some localities a necessity, but by the use of such fuel, if the ores are good to begin with, certain very important qualities are produced in the pig. Charcoal iron is, therefore, freer from sulphur than coke iron would be, is made at a less pressure of blast in most instances, and there are probably qualities, not detectable by the chemist, in which the slow and deliberate method of making charcoal iron in old fashioned furnaces gives us an improved quality which the rapid pressure modern coke irons do not possess. It seems as though there were certain important qualities in cast iron which are not to be determined by the mere knowledge as to how much silicon, manganese, phosphorus and sulphur the iron contains.

These charcoal irons possess great strength and are absolutely necessary in the case of such castings as rolls, which must be uniform and homogeneous throughout, free from surface flaws of any description and of very great strength.

Use of Scrap.

It is the writer's belief that almost any pig iron is improved by remelting, especially if its sulphur content is low in the first instance. Raw pig iron is likely to be very high in carbon. There are two forms which carbon may assume in iron castings, namely, graphitic and combined. In the graphitic the carbon separates from the iron into large flakes like plumbago, and this has the effect of separating the particles of the metal, insulating them from each other, and tending to make the iron soft and weak. The effect of remelting the iron is to re-

* From a paper read before the Pittsburgh Foundrymen's Association, Pittsburgh, February 5. Mr. Bole is superintendent of the Westinghouse Machine Company, East Pittsburgh.

duce the amount of this graphitic carbon. The principal difference between iron and steel lies in the fact that steel contains no graphitic carbon, and a rather high percentage of combined carbon depending upon the purpose for which the steel is intended. It is really the presence of graphitic carbon which makes the pig iron to be iron instead of steel. In an open hearth steel melting furnace the carbon is burned out, and the iron changes from pig iron into steel. Therefore, each remelting of the pig iron, if it could be done with a fuel containing no sulphur, would be one step toward making steel out of your cast iron.

This tendency of the carbon to become graphitic is useful for some purposes and harmful for others. In fact it might be fair to state that there is no such thing, properly speaking, as impurities in iron; the sulphur, phosphorus, manganese and silicon bear about the same relation to pig iron that pepper, salt, mustard and vinegar do to the food we daily eat. Each one of these elements has a certain effect upon the iron, and rightly employed they do good instead of harm. They must, of course, be controlled or there will be bad results, just as though too much salt had been employed in an otherwise very nourishing and palatable dish of food.

The tendency of graphitic carbon to form while the iron is cooling makes thin castings soft where otherwise they might be too hard to machine, and if very thin castings are to be poured, such as novelty work and the like, it might be said that the iron could not be too high in graphitic carbon. If this same iron, however, were poured into thick and heavy sections, the result would be carbon flakes so large and so separating the grains of iron one from another as to make the iron soft and weak, with a tendency to be porous and spongy in the center and unsuitable for any such work as engine work. The remelting of the iron tends to reduce this graphitic carbon, and therefore scrap, being remelted iron, is profitably employed where the castings are thick and heavy, in order to close up the grain of the iron and make the metal solid and strong, even where it is quite thick in section. This is equivalent to saying that scrap should be used more carefully and sparingly in thin castings, and used freely and in considerable quantity for large and heavy work, the only danger in the case being that each remelting of the iron is likely to increase the sulphur content.

It is not always safe to use too much scrap of unknown character, lest the sulphur run too high. In cases where the castings must be particularly clean, close grained and hard, as for instance, cylinders for steam and gas engines, it will be advantageous to use a very considerable quantity of scrap, and if the gates and sprues and pig bed of the previous heats can be collected and saved for this purpose, the results will be better than though any raw pig is employed. This use of scrap iron should be employed rather to improve the quality of the iron than to simply cheapen the cost. If this improvement in quality is constantly kept in mind it will lead to scrutinizing the scrap to reject any pieces which are obviously unfit to use, such as burned iron found in grate bars, annealing boxes and the like. All bolts, nuts, or other wrought iron or steel pieces should be picked out of the scrap pile and not allowed to enter the cupola or air furnace.

Requirements of Castings

Before any statement can be made in regard to the proper iron to use the foundryman must know what is the character of the casting which is to be made. Probably no question is more vital than the question of size—that is, its thickness as affecting its rate of cooling. It is an absolute impossibility to find any one iron which is suitable at the same time for very heavy and very light work. To employ metal from the same ladle with which to pour a casting whose average thickness is 2 inches and another casting whose average thickness is ¼ inch is a foundry absurdity, and should be so considered and recognized by the man in charge. The iron which will make the large casting close, solid, strong and reliable will make the small casting hard and flinty and impossible to machine. Conversely, the iron which will make the small casting soft and suitable for its purpose will be likely to make the large casting open, spongy, weak and with great tendency to shrink in the thick spots, and in general produce bad work. Therefore the difficulty of running a general foundry, in which both light and heavy work are to be cast on the same day and out of the same cupola, is very considerable.

If the foundryman has nothing but light work to cast he should use irons which are low in sulphur, fairly high in phosphorus and high in silicon. These qualities will give him softness and at the same time sufficient strength for most ordinary purposes. If, on the other hand, the foundryman is making only large and heavy work, where soundness and strength are demanded, he must necessarily employ an iron harder in its quality, and this is to be produced by using metal comparatively low in silicon, lower in phosphorus and which may contain considerably more sulphur than would be permissible in the light castings. This is one of the reasons why foundries running on specialties have much better results with their castings than general foundries making, or attempting to make, both classes of work. We should, as far as possible, use a different cupola for our light and medium work, which we wish to come soft, from that employed for our large and weighty pieces, which require a different metal to be charged in order to meet their peculiar requirements.

Using One Cupola for Different Grades of Metal.

Of course the cupola as a melting furnace is capable of being charged with different grades of metal, which may be tapped in the sequence in which it is charged, and a fair approximation may be had to what is wanted, provided the foundry foreman is very careful to stipulate just what he wants charged and in the proper order, and provided also he taps and pours this metal in the precise order which he had intended when making up the cupola charge.

It is probable, however, that the metals do not all melt in precisely the order in which they are piled in the cupola, and certain of the irons may melt too early or too late to take their proper place in the procession of events. In case special iron, either light or heavy, but different from the average iron of the heat, is desired, it is best to charge such special iron on the first coke bed and pour it off before the general run of the mix is tapped.

If this statement of the difference between requirements for large and small castings is true it involves a careful separation of such parts and a careful planning on the part of the foundryman as to the order in which his molds will be ready to pour, so that he may put the iron intended into the mold intended and not get the wrong iron into the wrong mold. Cupola melted iron is likely to be not thoroughly well mixed, and, as an illustration, two or three irons might be melted in the same charge and might be tapped out into the same ladle, but for want of stirring might be in the same condition as milk newly poured into coffee—that is, there might be a stratification of the various metals, and as the coffee is stirred up with a spoon, so it might be well to stir the iron up vigorously to produce a uniformity and amalgamation of the ingredients, which would tend to better results.

Stirring or Rabbling Iron in the Air Furnace.

For important work it is apparent that melting iron in the air furnace is superior to the practice of melting it in the cupola. In the air furnace the iron can be rabbled or stirred and thus made to thoroughly intermingle, and, in addition to this, the tendency to boil itself produces a stirring and intermingling of the ingredients, which always results in a stronger and more homogeneous iron. This rabbling, however, should not be done with steel or wrought iron bars, as is often the case. These bars will slough off, and the wrought iron, having a much higher melting point than the cast iron, will not thoroughly mix with the latter, but is likely to be carried along simply in suspension or as slag would be carried on the top of the iron, except that in this instance it probably floats with the metal, being of about the same density. It occurs to the writer that the spotted and mottled appearance of many finished castings is due to the fact that a scum of wrought iron from such cause as this has lodged

against the wall of the mold and in the finishing has revealed its presence by its different color.

It would seem to be safer practice to rabble or stir the molten metal in the air furnace by the use of wooden poles or saplings, and these latter, in addition to acting as stirring rods, produce a boiling by the sap or moisture within them, and this boiling gives the iron a chance to thoroughly mix and mingle, and possibly to rid itself of any contained impurities by the agitation.

It would be impossible to use just this same method in cupola melting, but to hold a hickory pole in a ladle of iron being tapped from the cupola ought to produce something of the same results, and the boiling in the ladle would tend not only to stir it well but to throw off contained gases by bringing them to the surface. The use of small quantities of aluminum, about 1 pound of aluminum to the ton of iron, has been recommended as a means of reproducing this same sort of searching out of molten iron. It is alleged that the aluminum has a strong affinity for any contained oxygen in the molten metal, this oxygen being present in the form of burned iron, as the foundryman recognizes it. It is well known to foundrymen that burned grate bars and other such iron, when charged into the cupola, are the source of great trouble, and that, while such impurities create a great amount of slag, it is to be feared that part of the evil is taken up by the iron itself, although it may seem to be comparatively clean and free. The aluminum is alleged to have the property of eliminating such contained oxygen, making the castings sounder and more solid. The aluminum is very light and would float on the surface of the metal; it is, therefore, preferable to hold it below the surface of the metal in some way and allow it to diffuse itself throughout the entire ladle.

The Composition of Castings.

In general it is probably safe to say that cast iron does not permit of softness and strength in the same iron; that softness in cast iron is always accompanied by weakness, and that strength in cast iron is always accompanied by hardness, unless the iron should be so hard as to be chilled in thin sections, and then it becomes brittle and weak from its chilled state.

The following is a table submitted as a statement of opinion of the relation which should exist between the thickness of metal in the body of a casting and the chemical composition of the iron out of which it should be poured:

Thickness. Inches.	Silicon. Per cent.	Phosphorus. Per cent.	Manganese. Per cent.	Sulphur. Per cent.
¼	3.25	1.00	0.40	0.025
½	2.75	0.80	0.40	0.040
¾	2.50	0.75	0.50	0.050
1	2.00	0.70	0.60	0.060
1½	1.75	0.65	0.70	0.070
2	1.50	0.60	0.80	0.080
2½	1.25	0.55	0.90	0.090
3	1.00	0.50	1.00	0.100

It is of course understood that this is intended to apply only to our own local practice and to nothing else. Right here it may be well to state that in designing our engines we seldom ask cast iron to stand a higher working strain than about 2000 pounds per square inch, in some extreme cases perhaps as high as 3000 pounds, and this is so far below the limit of strength in any good iron that the factor of safety is very large.

In the case of very small castings, if we calculated their thickness on the basis of the strength of the iron, they would be so thin that the foundry would be taxed to produce them, and, generally speaking, small castings are made thicker than considerations of strength demand, simply because this action complies with the foundry requirements better. In the case of very large machinery, however, it is different, and when cylinder walls and other thicknesses run up to 2 and 2½ inches, it is because the strength in such castings is demanded by the strain upon them, and it is somewhat unfortunate in fact that these large castings of thick section, by virtue of their slower cooling, crystallize into a larger structure in the act of cooling, and are not inherently as strong as they would be if poured into lighter molds. Therefore, while it is important in the light work to select iron which is sure to be soft, it is just as important, if not more so, in the large work, to select iron which is sure to be strong.

Analyses of Pig Iron Used.

For your benefit the following analyses of various pig irons which we are now employing are presented, in order that in the light of the foregoing you might be able to pick out what pig iron should be employed for making your large and heavy castings, and what should be employed for making your thin and light castings. It must be understood, however, that no single analysis can be depended on for any given brand of iron, that the irons are liable to vary, due to changes of the quality of ore or the quality of coke at the blast furnace, and these variations might be produced by as simple a thing as a dry season in the coke regions, compelling the use of sulphurous water in quenching the coke.

Brand of iron.	Silicon. Per cent.	Manganese. Per cent.	Phosphorus. Per cent.	Sulphur. Per cent.
Hecla	1.61	1.27	0.23	0.061
Mannie (charcoal)	4.36	0.51	2.16	0.073
Isabella	3.09	1.00	0.745	0.028
Clinton	1.81	1.29	0.512	0.013
Ella	1.24	0.45	0.251	0.044
Olive	1.38	0.59	0.874	0.156
Pioneer	2.09	0.56	0.68	0.048
Mabel	0.98	0.40	0.122	0.034
Emporia	3.29	0.63	0.804	0.010
Tonawanda	1.62	0.31	0.628	0.066
Bellefonte	2.21	0.39	0.66	0.079
Punxsutawney	1.22	0.49	0.64	0.022
Ella	1.08	0.43	0.246	0.070
Cherry Valley	2.21	0.61	0.941	0.066
Hinkle (charcoal)	1.36	0.31	0.136	0.019
Mary, No. 3	1.17	0.77	0.325	0.031
Seneca, No. 2	2.39	0.41	0.277	0.009
Seneca, No. 3	1.41	0.46	0.237	0.028
Embreyville	2.87 to 1.59	0.82	0.278	0.089

Every carload of metal should be analyzed, and the selecting of the specimens from every car should be carefully done and as far as possible always by the same man in order to insure his getting a uniform specimen of each carload. The iron should be tested for hardness and tendency to chill by casting a sample piece against a cold metal chill and always with a uniform speed of pouring, so as to avoid accidental differences calculated to offset the accuracy of such determinations. The iron should also be tested for strength daily by making cross breaking specimens one inch square, about 14 inches long, which shall be broken on knife edges set 12 inches apart, with the breaking weight applied at the center. By daily comparison between the analyses of the iron charged and compared with the depth of chill and strength of test specimen, as well as analysis of the casting, a careful cooperation between the chemist on the cupola platform and the foundryman on the foundry floor should produce good results. Neither one of these men can do the business alone or without the co-operation and assistance of the other. If the foundry foreman shall pour the iron intended for thick castings into thin molds he will produce bad results, and in such cases should not attempt to hold the chemical treatment as responsible.

Bad Castings.

If the casting is bad it may be for any one of several reasons. If it cracks in the cooling it may be due to the quality of the metal out of which it was poured, or it may be due to the haste with which it was uncovered and exposed to the cold air in cooling. The iron which will make a good casting when slowly cooled may make a cracked casting if the latter is pulled out of the sand too quickly, and since in our practice we are in the habit of unusual speed in pulling red hot castings out of the sand it is particularly important that iron should be free from shrinkage tendencies, and therefore should be low in sulphur.

It is unquestionably good practice to allow the castings to remain in the sand as long as possible, and, if circumstances permit, until they are perfectly cold. Certain castings having unsymmetrical proportions may be aided in the act of cooling by exposing the thick places first, as, for instance, in the case of a heavy fly wheel with a set of light arms it will be advantageous to expose the outer portion of the rim and cause the rim to cool and contract

more rapidly than otherwise and more nearly in time with the thinner arms.

Certain castings, by virtue of their intended use, are much more critical than others, and the iron which might be good enough for bed plates or engine housings, which do not receive much finish and which may be cast with the critical side downward, may not be sufficiently good iron for cylinders, in which there is a great amount of finished surface and which a comparatively small defect will cause to be rejected.

Care Needed in Making the Runner.

In the case of dirty castings, it may often be the case that the manner of cutting the gates is responsible for the dirtiness. The iron may enter the mold in such a way as to wash away part of the sand mold and the sand mold thus liberated may fuse with the iron, forming a pasty, sticky mass, and may defy the rules of gravity and not swim to the top of the mold, but adhere to the mold wall tenaciously and allow the molten metal to surround it and pass on over it. This will result in a sandy, spongy spot, which may condemn a large and valuable casting. It is of the utmost importance, therefore, that the foundry foreman should supervise the method and manner of cutting the gates, and not allow this to be done at the whim of the individual workman.

The runner, or entry, by which the metal finds its way into the mold, is exposed to far more severe service than the body of the mold proper. In the case of a large casting, it may be that 20 or 30 tons of metal are compelled to run through a narrow passage, something like a hose, and this iron, being fresh from the furnace and intensely hot, will fuse the sand on the walls of the runner or intake; and if the sand thus fuses it will form a glassy, pasty composition, which may be dragged along by the stream of metal to lodge some place in the mold, and generally in an important and critical place. It is, therefore, of great importance that the runner or intake should be formed out of the very best sand obtainable and carefully dried and protected by the best of facing, in order to prevent this action. For such facing, plumbago or graphite is used, because it is almost infusible by heat, being one of the most difficult materials to melt known to man. If pure plumbago is used as a facing, preferably by swabbing it on in liquid form and then drying, this makes a non-conducting covering, so to speak, protecting the sand against the heat of the iron.

For pouring large and critical castings, such as cylinders, we advocate the use of fire brick runners in order to prevent the sand from being thus acted upon at this most critical point in the whole mold, a good fire brick having a higher resisting power against heat than molding sand, and if they are protected by a good coating of plumbago facing they will endure a vast amount of liquid metal pouring over them without giving way to it. It is a universal practice in the making of steel castings, in which the molten metal is very much hotter than any iron foundry ever experiences, to use clay runner pipes made especially for this purpose, and for the particular reason that the sand out of which the molds are prepared is not good enough to stand the onrush of the fresh liquid metal.

As the iron is rising in the mold, such molds being usually poured from below, the walls of the mold are not exposed to the same furious action as the walls of the runner. The iron does not pass them with the same velocity, and is not of the same intense temperature by the time it reaches the mold proper, and therefore the wall of the runner gets more service than the walls of the mold.

There are probably few departments of manufacturing in which there is as much chance work and as little absolute and positive knowledge as in the making of iron castings. This will account for the various opinions which are advanced by various experts, each equally competent in his own line, and yet radically different from each other in his views.

The Waynesburg Forge, Sheet & Tin Mills, Waynesburg, Pa., have undergone a change of management. W. H. Griffiths, the former president of the company, has disposed of his interests to local parties and is succeeded in the presidency by Carr H. Bowlby. W. H. Baker, who was formerly connected with the company as general manager and who resigned his position some 18 months ago, has resumed his duties in the same capacity. It is the intention of the new owners to operate the works in the manufacture of charcoal iron products exclusively. In addition to the line of charcoal iron black and galvanized sheets and roofings which the company has heretofore made, it will manufacture charcoal iron terne plates of all grades.

The Philadelphia Foundrymen's Association.

There was a large and representative attendance at the one hundred and fifty-fourth regular meeting of the Philadelphia Foundrymen's Association, held at the Manufacturers' Club in that city, Wednesday evening, February 7. The Juniata Furnace & Foundry Company, represented by Marshall Brothers, Front street and Girard avenue, and the Hamilton Metal Company, 2235 Vine street, were admitted to membership.

A flourishing condition of the financial affairs of the association was evident from the report of the treasurer, who announced a balance of over $2200 on hand, with all indebtedness paid. There was no regular paper before the meeting. In its place there was a general discussion of foundry conditions, in which nearly all of those present participated. It was the consensus of opinion that the foundries never enjoyed greater prosperity than at the present time. A large tonnage of work is being offered, and in instances foundries are so well covered that prompt deliveries are impossible. The discussion of selling prices was particularly interesting. Cases were cited where extremely low prices had been quoted by out of town foundries, but it was evident that these were made on small tonnages where the work was largely taken to fill in with the general work in hand. It was contended that if heavy tonnages were offered such foundries they would be unable to handle the work at the figures quoted on smaller lots. These conditions, it was said, did not exist in the foundries that did business on a modern basis, but was attributed largely to those of the so-called small "country foundry" type.

The question of the advisability of stocking up coke and pig iron, in view of the possibility of a coal strike, was taken up. Cases were stated where such was being done, and it was considered that it was a wise precaution to take. This brought about the discussion of the deterioration of coal and coke stored in quantity in the open air. Bituminous coal, it was admitted, lost in efficiency. There was no deterioration in coke under ordinary weather conditions. The percentage of moisture as a rule increased usually about 10 per cent., which must be allowed for if the coke were charged by weight. If, however, the coke be wet and permitted to freeze, a breaking up of the cellular construction resulted to some extent. A decrease in strength resulted and such coke would not stand the burden in the cupola as well as coke not affected by this condition. This, it was said, could be overcome to a large extent by the addition to the coke charge of a small amount of anthracite coal.

A general cost system was favored by some foundrymen, who were most emphatic in their support of such means of arriving at the cost and consequent selling price of castings, it being also contended that the extreme variations which were sometimes noticeable in quotations from various concerns would thereby be eliminated.

Luncheon in the club dining room followed the meeting, at which Howard Evans acted as toastmaster, and interesting impromptu addresses were made by Thomas Devlin, W. H. Ridgway, W. O. Steel, J. H. Barlow, M. Fleckhart and H. L. Tripple.

A bill authorizing the recovery of freight rebates or unjust discrimination to the amount of twice their value, half the amount recovered to go to the informer or prosecuting witness, passed the House of Representatives February 12.

Drawbacks Paid in 1905.

WASHINGTON, D. C., February 13, 1906.—The annual report of the Department of Commerce and Labor, embracing the statistics showing the refunds made under the drawback law during the fiscal year 1905, which has been delayed by reason of the press of business in the Bureau of Statistics, will reflect the unprecedented efforts of manufacturers to take advantage of the drawback laws with a view to extending their foreign commerce. The aggregate of the drawback payments made that year is the largest on record, amounting to $5,806,475, as compared with $4,809,808 in 1904 and $5,430,397 in 1900, the largest aggregate prior to last year.

Increased Exports of Manufactures.

The following figures show the drawbacks paid during the past seven years, as compared with our exports of manufactures:

Fiscal year—	Drawbacks paid.	Total exports of manufactures.
1899	$3,793,885	$339,592,146
1900	5,430,397	432,284,366
1901	5,215,502	412,155,066
1902	4,947,662	403,890,763
1903	5,058,862	407,526,159
1904	4,809,808	452,445,629
1905	5,806,475	543,620,297

It is gratifying to observe that the decline in drawback payments noted in 1904, as compared with 1903, did not continue, and while the ratio between drawbacks paid and the total exports of manufactures was smaller in 1905 than in 1900, yet the actual gain in the total refunds during 1905 is larger than for any year since 1900 and would seem to indicate that the payments in 1904 represent a low level, which will not soon again be reached.

Drawbacks on Metal Products.

Never in the history of the drawback law were such efforts made by the Treasury Department experts as were put forth last year to meet the requirements of manufacturers. In manufactures of iron and steel careful attention was given to all complaints concerning impracticable features in existing or proposed regulations and the result is seen in the increased exports of iron and steel and other metal products. The following table shows the drawbacks paid on each class of metal products in 1904, as compared with 1903:

Article.	1903.	1904.
Aluminum	$170	$46,958
Brass manufactures	155	.....
Railroad cars	1,317	11
Electric cable	21,959	28,827
Electric instruments	15,018	3,558
Bar iron and steel	.....	181
Castings	.....	111
Billets, ingots and blooms	16,832	57,747
Car wheels	8,619	1,101
Brake work	158	.....
Embossed iron	2,485	495
Forgings, bolts, nuts and spikes	11,670	13,327
Steel hoops	.....	319
Locomotives	36,812	48,980
Boilers	983	635
Parts of engines	.....	4,671
All other machinery	15,464	29,201
Nails and spikes	32,961	15,641
Pipes and fittings	.....	4,779
Steel rails	5,135	132,558
Railroad switches	73	.....
Saws and saw blades	2,684	1,971
Steel plates and sheets	5,074	1,667
Structural iron and steel	48,952	96,189
Tubing, iron and steel	17,377	.....
Wire and manufactures of	44,462	36,066
All other manufactures of iron and steel	17,103	28,322
Pig lead	98	1,164
Lead pipe	1,215	5,513
Lead sheets and shot	11,004	49,110
All other manufactures of lead	7,718	8,191
Nickel	1,054	.....
Tin cans	1,646,263	2,273,240
Other tin manufactures	32,117	.....

Of course the most significant feature of the above table is the large increase in the drawback paid on tin cans, amounting to more than $600,000, or nearly two-thirds the total gain in refunds on all classes of goods during the year. It should be said, however, that the drawbacks paid on tin cans in 1904 were abnormally small, the total for 1903 being $1,841,734, as compared with $1,646,263 in 1904 and $2,273,240 in 1905. These fluctuations are believed to be due chiefly to the operation of the unofficial drawback regulations of the United States Steel Corporation, which has sold plates for the manufacture of tin cans for the exportation of oil and other products at rates closely approximating duty free foreign plates. At certain times during 1905 it appeared more advantageous to the oil shippers to buy foreign plates with benefit of the official drawback, which is believed to account for the marked increase in the refunds on account of this item.

The next largest increase in payments made in 1905 was in steel rails, which rose from $5135 to $132,558. These drawbacks were secured by one or two large companies and do not represent any general export movement in rails manufactured from foreign materials with benefit of drawback. Notable increases are also recorded in drawbacks paid on electric cable, billets, ingots and blooms, bolts, nuts and spikes, locomotives, miscellaneous machinery, structural iron and steel, miscellaneous manufactures of iron and steel and lead sheets and shot.

Since the convening of the present Congress the so-called Lovering Drawback bill, designed to liberalize the drawback statute, has been reintroduced and is now before the Ways and Means Committee. This committee has been occupied with a number of important measures since the beginning of the session, but an effort will soon be made to secure a hearing for the advocates of the pending bill. The Secretary of the Treasury is very favorably disposed to the general project for the liberalizing of the drawback law. W. L. C.

American Locomotives Excel.

The superiority of American passenger locomotives over those of the best foreign build as regards speed, economy and power is shown in results of exhaustive tests made under the supervision of some of the leading American and European engineers, just made public.

The work was begun by the Pennsylvania Railroad Company at the St. Louis Exposition and covered a period of more than six months. The tests were most elaborate and involved an expenditure of $250,000.

The tests were made under the direction of an Advisory Committee, consisting of three members each of the American Society of Mechanical Engineers and of the American Railway Master Mechanics' Association. These were Dr. W. F. M. Goss, dean of the Schools of Engineering, Purdue University; Edwin M. Herr, vice-president of the Westinghouse Electric and Manufacturing Company; J. E. Sague, first vice-president of the American Locomotive Company; F. H. Clark, general superintendent of motive power of the Chicago, Burlington and Quincy Railroad; C. H. Quereau, superintendent of electrical equipment of the New York Central, and H. H. Vaughan, superintendent of motive power of the Canadian Pacific Railway. The affiliated members of the committee included John A. F. Aspinall, general manager of the Lancaster and Yorkshire Railway of England, and Karl Steinbiss, director of the Royal Prussian Railway, Germany.

The American passenger engines tested were one of the New York Central high speed type used for hauling the Empire State Express and one of the Atchison, Topeka & Santa Fé Road's balanced compounds. Several freight engines were also submitted to tests.

One of the foreign locomotives was the much-heralded de Glehn balanced compound, built by the Société Alsacienne de Constructions Mecaniques at Belfort, France. This type of locomotive is used on the Chemins de Fer de Nord, between Calais and Paris, and makes one of the fastest runs in the world. It is also in use on the Great Western Railway of England. This engine is regarded by European experts as the acme of high speed passenger service perfection on the other side. The other European locomotive tested came from the Hannoversche Maschinenbau-Actien-Gesellschaft, Linden Vor Hannover, Germany. This engine was built for the directors of the Royal Prussian Railway Administration.

THE IRON AGE

1855—1906.

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Proposed Legislation in Aid of Strikers.

The sessions of the various State Legislatures are yielding the usual quota of "labor" bills, and in a number of these it is sought to prevent interference by the courts with the methods adopted by labor unions in carrying on strikes. At Washington the perennial antiinjunction bill is now before the Judiciary Committee of the House, and some features of it appear to have the approval of members of the committee who have opposed previous bills having similar general purpose. In Massachusetts a picketing bill has been introduced, as heretofore noted in these columns, the object being to give picketers a legal status in the operations they conduct in the vicinity of plants from which the employees have gone on strike, the purposes for which they may use the streets and ways in the vicinity of shops being set forth as "in a peaceful way to converse with persons intending to go to such employer for work, for the purpose of informing them of actual facts, in order to induce them not to enter into or not to continue in said employer's service." In Ohio antiinjunction and eight hour bills are reported to be ready for introduction in the Legislature.

An outgrowth of some recent strikes in Ohio, notably that of the Iron Molders' Union at Cincinnati, is House Bill No. 80, introduced at Columbus and designed to make it difficult for employers to secure employees to take the places of strikers. As it is a sample of much of the special legislation proposed in the interest of labor unions, we present its entire text below:

Section 1. It shall be unlawful for any person, persons, company, corporation, society, association or organization of any kind doing business in this State, by himself, themselves, his, its or their agents or attorneys, to induce, influence, persuade or engage workmen to change from one place to another in this State, or to bring workmen of any class or calling into this State to work in any of the departments of labor in this State, through or by means of false or deceptive representations, false advertising or false pretenses concerning the kind and character of the work to be done, or amount and character of the compensation to be paid for such work, or the sanitary or other conditions of the employment, or as to the existence or nonexistence of a strike or other trouble pending between employer and employees, at the time of or prior to such engagement. Failure to state in any advertisement, proposal or contract for the employment of workmen that there is a strike, lockout or other labor troubles at the place of the proposed employment, when in fact such strike, lockout or other labor troubles then actually exist at such place, shall be deemed as false advertisement and misrepresentation for the purposes of this act.

Sec. 2. Any person, or persons, company, corporation, society, association or organization of any kind doing business in this State, as well as his, their or its agents, attorneys, servants or associates found guilty of violating Section 1 of this act or any part thereof, shall be fined not exceeding $2000, or confined in the county jail not exceeding one year, or both, where the defendant or defendants is or are a natural person or persons.

Sec. 3. Any person or persons who shall, in this or another State, hire, aid, abet or assist in hiring, through agencies or otherwise, persons to guard with arms or deadly weapons of any kind other persons or property of this State, or any person or persons who shall come into this State armed with deadly weapons of any kind for any such purpose, without a permit in writing from the Governor of this State, shall be guilty of a felony, and on conviction thereof shall be imprisoned in the penitentiary not less than one year nor more than five years; provided, that nothing contained in this act shall be construed to interfere with the right of any person, persons, or company, corporation, society, association or organization in guarding or protecting their private property or private interests as is now provided by law; but this act shall be construed only to apply in cases where workmen are brought into this State, or induced to go from one place to another in this State, by any false pretenses, false advertising or deceptive representations, or brought into this State under arms, or removed from one place to another in this State under arms.

Sec. 4. Any workman in this State, or any workman of another State who has or shall be influenced, induced or persuaded to engage with any persons mentioned in Section 1 of this act, through or by means of any of the things herein prohibited, each of such workmen shall have a right of action for recovery of all damages that each such workman has sustained in consequence of the false or deceptive representations, false advertising and false pretenses used to induce him to change his place of employment, against any person or persons, corporations, companies or associations, directly or indirectly causing such damages, and, in addition to all actual damages such workmen may have sustained, shall be entitled to recover such reasonable attorney's fees as the court shall fix, to be taxed as costs in any judgment recovered.

Deception and false pretense used to induce men to spend money or to remove from one place to another to take employment where they would not have gone had the real status been explained amount to criminality under certain conditions and call for punishment. But to compel an employer to herald over the country the fact that a strike exists at his plant; to compel him to give currency to the impression that he is not able to take care of orders, and therefore to advertise his business unfavorably, is of a piece with the union theory that no strike is to be resisted and no demand of a union is to be refused. Such a law would compel an advertiser for domestic help, for example, to state explicitly, if such were the fact, that the last occupant of the position had struck for higher wages. The office boy or clerk withdrawing from a position because more pay was asked and refused could have the employer prosecuted if the advertisement for a successor did not stipulate that a strike was on. The proposed act is typically vicious in that it was drafted and designed with the specific object of making an employer aid and abet in his own defeat in case of a labor trouble from whatever cause. Positions in offices or manufacturing plants or homes or hotels, or in any place whatsoever where work is done for wages, should have exactly the same standing before the law, whether vacated by death, by strike, by dismissal or by the withdrawal of the occupant to take other service. The effort to give the strike a separate special status and to hedge it about with legal aids and preferences is simply a method of reinforcing the dicta of labor unions with the authority of the law. In the case of the proposed Ohio legislation the phraseology is probably sufficiently jumbled to render it null and void. All the enactments of all the legislatures in the Union cannot make "false pretense" and "deceptive representation" out of a failure to announce in an advertisement that the person last employed in a certain position left it after making a demand that was not granted; so that the second part of section 3 in effect pulls the fangs of section 1. A fit companion piece to a bill which defines "failure to state" as "false representation" would be a bill supplementing the present status for the punishment of assault with the proviso that assault upon a workman accepting a position which a striker had left "shall be deemed 'peaceable persuasion' for the purposes of this act and shall not be punishable as above provided." The evolution of labor legislation need not proceed far to give us this type of monstrosity.

The Combustion Engine in Torpedo Boats.

The recent preliminary tests of a torpedo boat propelled by combustion engines, undertaken on the Thames by Yarrow & Co., seem to have demonstrated that the speed limit of practically designed small craft is by no means reached. This little boat is but 60 feet long and 9 feet beam and weighs, fully equipped with engines and

fuel, only 8 tons; yet she made a speed of 25½ knots, or about 30 miles. She carries a machine gun forward and a torpedo tube aft and is said to be seaworthy. Her propelling mechanism consists of three petrol engines, each driving its own screw. The two wing propellers have engines of 120 horse-power, while the central screw is driven by a 60 horse-power engine, which is the only one of the three capable of reversing. Her designers point out that the saving in weight of equipment resulting from the substitution of combustion for steam engines, which is about 50 per cent., permits of radically different design of hull, with a flat bottom, the result being that the boat mounts the water when driven, making little wave.

It is claimed that a boat of the same size driven by steam could make no more than 20 knots, one of the reasons for the tremendous difference being the lesser weight. It is argued that the boat can be lifted to the deck of larger craft and thus made available for service in distant waters during manœuvres; that it presents a small target to the enemy; that its crew is smaller than with a steam craft, thus jeopardizing the lives of fewer men in action, and that its cost is only one-fifteenth part of that of a modern torpedo boat destroyer. The result of further tests will be watched with much interest, not only by naval experts, but by those interested in the development of the combustion engine for marine purposes. The exponents of this type of motor have great faith in its future, and the actual successful use of a craft such as this Yarrow boat will stimulate them to further endeavor. Obstacles to its successful use in war may arise, but the experiment seems to be a step which will be followed by others in rapid succession if the tests work out to the confident expectations of the designers.

The Sliding Scale and American Gas.

The special Massachusetts commission which has visited England to investigate the sliding scale system of regulating the price of gas and the dividends paid by gas companies has made its report, which contains valuable information, especially as to the practicability of adapting the system to American communities. The projected work of the commission was alluded to in these columns in September. Now the work is done. The three members of the State Gas Commission, constituting a majority of the special board, make no recommendation for legislative action, not because the English system is not a good one, but rather because its adoption here would require fundamental changes in the present system. The two other members of the commission, however, present to the Massachusetts Legislature a strong statement of their conviction that the system should be adopted for the city of Boston and the large town of Brookline, with the ultimate purpose of extending its provisions through the State.

It should be borne in mind in considering the general subject of gas that the time is rapidly approaching when other public service interests, notably the electric companies, which also provide their customers with light, power and heat, must be dealt with legislatively in practically the same manner as the gas companies, and what shall now apply to the gas companies must ultimately, from the very similarity of the functions performed for the public, and the similarity of the privileges accorded them by the public, come under the same general system of laws. Thus the subject is a broader one than the report of this commission can include.

The sliding scale system is thus defined by an English expert: "A standard selling price for the gas and a standard dividend rate of dividend being given, it is provided that for every penny of reduction in the price of gas below the standard the company is empowered to pay ¼ per cent. above the standard dividend, or 1 per cent. for a reduction of 4 pence (8 cents), and vice versa if the selling price of gas is raised." It is a partnership between investor and consumer. In England the system has proved a keen incentive to able management of gas plants. Under the demand of both stockholders and consumers the cost of production has been lowered, plants have been improved, greater care given the utilization of by-products, and the result is lower gas bills and bigger dividends. The cheaper the gas the greater is the consumption. The greater the consumption the lower is the cost of production, and there results more lowering of gas bills and still larger dividends. Says this minority report: "The comparison between the sliding scale companies, of which there are over 200, and companies working under the maximum system (the name given a system similar to that in vogue in America) shows (*a*) that the sliding scale companies on an average sell gas at lower prices than do the latter and pay larger dividends to stockholders; (*b*) that the sliding scale companies produce more gas and do more business than the maximum companies; (*c*) that the average rate of reduction in the price of gas in the sliding scale companies has been greater than that of the maximum companies."

Because of the wide difference in conditions in the various municipalities of the State, "it is clear," says the report, "that no single standard price or standard dividend, and possibly not even a fixed ratio of increase or decrease of dividends, can be justly applied to all companies. To a proper decision of these factors a separate investigation is essential of the affairs of the particular companies to be affected." As for the city of Boston the report recommends that the system be applied to the Consolidated Gas Company, which in the last current year sold 3,036,245 thousand cubic feet out of the total of 3,295,952 thousand cubic feet of gas consumed in the city. The recommendation is that the standard price shall be fixed at the present rate, 90 cents, and the standard dividend at 7 per cent., and that for every 5 cents reduction in price of gas an increase in dividend of 1 per cent. may be made. Under such an arrangement the report expresses the belief that within a few years 75-cent gas will be sold in Boston.

This matter of gas is industrially important. Electric power, as sold by municipal plants, promises to be even more so, especially in the larger cities, where it is usually more convenient to buy electric power than to operate an individual power plant, excepting in large establishments. Many manufacturers complain of the prices they have to pay for gas, though, of course, the burden is very much less than what it was when it was exclusively depended upon for illumination. In many places the inefficiency of the management of the gas companies is well understood by consumers, and they know they are paying for the inefficiency. The sliding scale system may not be the best, but any system that will result in cheaper gas would be welcomed everywhere.

According to the *Wall Street Journal*, the total amount of corporation bonds issued and sold in the New York market in 1905 was $1,130,000,000. The following is a list of total bond issues by railroad companies that sold $15,000,000 or more: Pennsylvania, $115,000,000; Southern Pacific, $105,000,000; Western Pacific, $50,000,000; New Haven, $40,000,000; Oregon Short Line, $40,000,000; Atchison, $32,000,000; C., H. & D., $31,000,000; Rock Island, $25,800,000; Missouri Pacific, $25,000,000; C., B. & Q., $23,859,000; New York Central, $23,000,000; Colorado & Southern, $17,000,000; total, $537,659,000. These twelve railroad corporations supplied almost 50 per cent. of the total new corporation underwriting in Wall Street in 1905.

CORRESPONDENCE.

Tests of a Coke Oven Gas Engine.

To the Editor: The issue of *The Iron Age* for February 1, page 422, gives under the caption, "Tests of a 500 Horse-power Coke Oven Gas Engine," a *résumé* which, it seems to the writer, does not fully bring out all the points of interest in an unusual and apparently highly satisfactory test. I will take up the points in order.

The engine in question was of the Oechelhaeuser two-cycle type, built by the Borsig Works, and I infer was practically the same in construction as was described in 1905 by Professor Riedler in the *Zeitschrift des Vereines Deutscher Ingenieure*, No. 8. For the benefit of those to whom this type of engine is not familiar it is perhaps worth while to note that the working cylinder contains two pistons, which receive the explosive gas mixture between them and which thrust therefore in opposite directions. One piston rod is prolonged in this case to drive the piston of a blast furnace blowing cylinder directly, the other, at the further end of the gas cylinder, being connected by a three-throw crank shaft and side rods to a cross head carried on the first piston rod. The return stroke of the piston, toward the central position in the cylinder, is accomplished by the power stored in a fly wheel. The gas and air mixture is pumped into the cylinder at low pressure, while the pistons are at their greatest distance apart. The mixture enters at one end of the cylinder through slits uncovered by the piston in its travel, and has a scavenging action, forcing the burned gases out at the exhaust slits at the other end of the cylinder. The return stroke compresses the charge, which is then ignited in turn.

The dimensions given are translated from the metric system with perhaps a little unnecessary latitude, but the only differences worth noting are in the length of the stroke of the front and back pistons, which differ by less than 3-16 inch in reality. The blowing cylinder is also of a little less than 65 inches diameter.

In giving the calorific power of the gas the calories per cubic meter, as given, are equivalent to from 353 to 438 British thermal units per cubic foot.

In citing the test at 110 revolutions, developing 628 horse-power net, the heat absorbed per hour was incorrectly taken from the adjoining column in the original table, and should have been 1,467,000 calories, which is equivalent to 5,868,000 British thermal units per hour. This is perhaps more clearly stated as 9360 British thermal units, necessary to produce 1 horse-power per hour of useful work.

The gas in this test was 387 British thermal units, consequently 24.2 cubic feet were required per hour per horse-power. This result, for so low grade a gas, is an excellent performance. It may also be stated that the total power required by the air and gas charging pumps was 112.7 horse-power of the engine. In the blowing cylinder the air was delivered against 9.3 pounds pressure per square inch.

The above test was cited as on the whole the most satisfactory of a series of 19 tests reported, under varying loads and adjustments. It is exceeded in actual economy by one at 86 revolutions, developing 342 net horse-power, with a heat consumption of 9280 British thermal units per horse-power per hour, the other operating conditions being not notably different. At these figures practically 26.3 per cent. of the total heat in the gas is transformed into useful work.

Ten of the remaining tests approach this economy quite closely, which may therefore be assumed to be well within practical operating conditions, particularly as the engine was treated in more or less of an experimental way to ascertain the proper operating conditions, rather than under the pressure of realizing specified economical figures. Moreover, the engine not having been built for this particular gas was at a disadvantage.

A further series of five similar tests made three months later showed in general the same figures, except that improvements on the charging pumps had reduced their power consumption to 10.3 per cent. of the indicated engine horse-power, while the efficiency of the engine was such that 29 per cent. of the total heat in the gas was delivered in useful work at the blowing engine.

The actual composition of the gas is also given in the original article, and in view of the vexed question of preignition is of interest. During the first series of tests the gas analyzed as follows:

	I.	II.	III.
Hydrocarbons	2.63	1.80	2.10
Methane	19.73	18.43	20.30
Hydrogen	42.00	48.08	43.80
Carbon monoxide	11.83	10.60	10.20
Carbon dioxide	4.91	4.90	5.30
Oxygen	0.20	0.30	0.40
Nitrogen	18.69	15.89	17.90

The gas therefore averaged roughly 44 per cent. hydrogen and 19 per cent. methane, an undesirably high percentage of the former, and liable to give trouble from preignition. When the engine was first put to work this trouble was encountered, but was later overcome by special arrangements made to that end, but not further described. During the test preignition did not occur, except in one case where the air outlet valve had been altered over night, and then the trouble was immediately overcome by properly adjusting it again. The compression in the gas cylinder during the first test described averaged 166 pounds per square inch and approximated this figure throughout the series. The operation of the engine is stated, however, to have been entirely smooth and regular throughout the test.

While it is important to know that preignition troubles were overcome in an engine of this size and with so unfavorable a gas, it is also true that the improved methods of coke oven operation in this country make it possible to recover a gas of much more desirable composition. The analysis of the surplus gas from an existing coke oven plant, built by the United Coke & Gas Company, is as follows:

Hydrocarbons	5.8
Methane	40.8
Hydrogen	37.6
Carbon monoxide	5.6
Carbon dioxide	3.7
Oxygen	0.4
Nitrogen	6.1
British thermal units per cubic foot	730

Such a gas, having less hydrogen than methane and nearly twice as much heat value as the coke oven gas used above, would unquestionably give as good economical results with even less danger of preignition troubles.

C. G. ATWATER,
THE UNITED COKE & GAS COMPANY.
NEW YORK, February 6, 1906.

Curve Wear of Rails on the Boston Elevated.

To the Editor: We notice in your issue of February 8 a reprint or extract from an article which appeared in the *Street Railway Journal*, entitled "Curve Wear of Rails on the Boston Elevated," and that you also reprint its statement that the manganese steel rails were removed from the track for renewal on October 23, 1905. These rails were furnished by this company and were not removed, are still in service and liable to continue in service for a long time. We call your attention to a correction of this statement made in the *Street Railway Journal* in the issue of February 3.

WM. WHARTON, JR., & CO., INCORPORATED.
PHILADELPHIA, PA., February 12, 1906.

The battle ship Dreadnought, which will cost complete $7,500,000, was launched by King Edward at Portsmouth, Eng., February 10. On October 2, 1905, work was begun on the vessel, and it is expected that the Dreadnought will be commissioned at the end of another year, making a record six months less than the shortest time in which a battle ship has been built. The tonnage of the Dreadnought will be 18,000, the length exceeding 500 feet and the beam 80 feet. Turbine engines are provided, with 23,000 horse-power, and the guaranteed speed is 21 knots. Armor plates are 12 inches thick, extending almost the entire length and 7 feet below the water line. The armament will consist of ten 12-inch guns in five turrets. No previous warship has carried more than four 12-inch guns.

For Free Industrial Alcohol.

Prominent Manufacturers Heard by Ways and Means Committee.

WASHINGTON, D. C., February 13, 1906.—The Ways and Means Committee during the past week held a series of hearings upon a number of pending bills providing for denaturalized alcohol for industrial purposes. The subject has attracted attention in nearly all the important industries, and more than a score of the representatives of prominent manufacturing interests appeared before the committee to urge the passage of a well considered bill that would supply American manufacturers with this much needed raw material without the payment of the present high tax, amounting to more than 1000 per cent. ad valorem. The project was warmly indorsed by the Secretary of Agriculture and by Dr. H. W. Wiley, chief of the Division of Chemistry of the Department of Agriculture; by Prof. Elihu Thomson of the General Electric Company; Leonard G. Goebel of the Otto Gas Engine Company, Philadelphia; James C. Warnes of the engine department of the International Harvester Company; James S. Capen of the Charles A. Strelinger Company, Detroit, manufacturer of gas engines; F. F. Ingram, representing the engine and power boat builders of the Detroit Board of Commerce, and A. N. Abbe of the American Hardware Company, New Britain, Conn. In addition, witnesses appeared on behalf of the piano manufacturers, the hat makers, the manufacturers of artificial silk, the watch manufacturers and the National Grange, an organization composed of many thousand farmers.

Views of Treasury Department.

With a view to laying a foundation for the discussion of the pending bills, Commissioner of Internal Revenue Yerkes was invited to address the committee at the opening session. His statement was very conservative, and was confined to the governmental aspect of the question, with special reference to the safeguards that should be provided to protect the revenue. In summing up his conclusions, Mr. Yerkes said:

I should be very strongly opposed to any measure permitting the use of pure grain spirits free of tax in the manufacture of medicines or other articles for internal use. I think that a bill of such a scope would be almost impossible of execution and would open the door wide to frauds. We can enforce a reasonable law limited to denaturalized alhol if Congress will give us the money to pay for supervision. There are no adherent difficulties that cannot be overcome.

Alcohol for Lighting.

Prof. Rufus F. Herrick, representing the Society of Chemical Industry and the American Chemical Society, then presented to the committee a statement showing the recent progress in the use of industrial alcohol in Great Britain, and in this connection he submitted a large number of samples of methylated spirits and of different grades of wood alcohol. A feature of the exhibit was a pair of French alcohol lamps fitted with Welsbach mantles, which were placed on the committee table, and which produced so brilliant a light that Chairman Payne requested that they be turned down.

A very carefully prepared statement was submitted to the committee by M. N. Kline of the Philadelphia Trades League, in which he summarized the results of an elaborate investigation undertaken to determine the amount of grain alcohol now used in the arts as the basis for an estimate of the probable loss of revenue should the committee decide to grant free denaturalized spirits for industrial purposes. This statement showed a total of 439,920 gallons per annum, which at the present rate of tax would amount to $483,912, a sum which Mr. Kline declared was absolutely insignificant in view of the great benefits that would be conferred upon the country by an enlightened free alcohol policy.

James S. Capen addressed the committee briefly in the interest of the manufacturers of internal combustion engines, a large industry in the city of Detroit and vicinity, which he said was being forced into a precarious position by reason of the scarcity and high price of gasoline.

Use in Gas Engines.

Frederick F. Ingram, who also appeared on behalf of the manufacturers of gas engines who are members of the Detroit Board of Commerce, made an interesting statement with regard to the use of alcohol for such engines. He said, in part:

"Removing the tax from alcohol when its use is restricted to industrial purposes by making it undrinkable has been a great boon to the German manufacturer, enabling him to successfully compete in otherwise inaccessible markets. It has also brought vast tracts of abandoned barren farm lands to unprecedented prosperity because these depleted, light, sandy soils, unfit for cereals, now produce great crops of potatoes that find a ready market as alcohol producers, the distillers fattening cattle on the refuse left after distillation, thus greatly increasing the wealth and prosperity of the country and furnishing their industries and war department at the same time a cheaper and inexhaustible source of supply for heat, light and power. Their chemical manufacturers are also liable to undersell ours in our own markets in spite of tariff restrictions because they use untaxed alcohol, the universal solvent, on which the American must pay a tax of 1000 per cent.

"The other chemical nations, excepting the United States, have followed Germany's example in freeing from tax alcohol used for industrial purposes. Fears once entertained that freeing industrial alcohol from tax would result in defrauding the revenue have proved groundless where tried, neither has there been cause for dissatisfaction from loss of revenue. Our government gets no revenue from the inferior substitutes now used in place of industrial alcohol.

"In no country can alcohol be produced at less cost than in the United States. It is sold in South American countries and in Cuba at about 10 cents per gallon. At that price it successfully competes with gasoline selling at 12 cents per gallon.

"While the heat units of alcohol are only about half those of gasoline there are differing properties that give it an efficiency superior to gasoline.

"The actual tax under our laws on the alcohol used in manufacturing a pound of smokeless powder is 37 cents. A similar handicap prevails in other industries, compelling the American to use inferior substitutes at increased cost, driving him out of competitive markets.

"Its economical use for heat, light and power is as unlimited as is the supply. Its free use would benefit the farmer by creating an output for starchy materials otherwise unmarketable, at the same time reducing the cost of motor power for farm work.

"That the average percentage of gasoline in petroleum from all the oil fields of the world is less than 2 per cent. may account for the steadily advancing price of this fuel for gasoline engines that are now manufactured at the rate of over 100,000 per year, an output that will be much increased if the cost of operating them is reduced as it would be with the cheaper alcohol."

Development of the Gas Engine.

Leonard G. Goebel of the Otto Gas Engine Company, Philadelphia, stated that his firm was a branch of the parent house in Cologne. The Philadelphia plant employs 250 men in the manufacture of gas and gasoline engines and has an output of about 20,000 horse-power per annum, of which about 12,000 horse-power are designed for the use of alcohol fuel. The annual output of the company would consume about 6,000,000 gallons of fuel yearly. Mr. Goebel described a recent trip to Germany to study the fuel problem, which was made necessary by the scarcity of gasoline in this country. Tests with alcohol for fuel, which were conducted with great care, showed a gain of 20 per cent. as compared with gasoline. The consumption of fuel was about the same, or approximately one-eighth of a gallon per horse-power per hour. The exhaust gases when alcohol was used contained 20 per cent. less obnoxious elements than with gasoline. Great attention was being drawn to the alcohol engine in Germany, and recently the German Emperor had offered a prize for an engine expressly designed for military purposes.

The introduction of free denaturalized grain spirits is rapidly revolutionizing the industry engaged in building small engines. In Cuba, where alcohol costs but about 10 cents per gallon, the Otto Gas Engine Company recently experimented with two small engines built for gasoline, in which it was found entirely practicable to use alcohol without important modification. With an engine rated at 10 horse-power no difficulty was found in developing 11 horse-power, and it was found to "warm up"

the engine. Similarly, a 15 horse-power engine developed 16.5 horse-power when run with alcohol.

Within the past few years the company has constructed 34 marine engines of 160 horse-power each for torpedo boats, 14 of which are in use in the United States Navy, while 20 were sold abroad. Careful tests had been made in running these engines with alcohol. On one occasion an engine was connected simultaneously with both gasoline and alcohol tanks, using the two fuels alternately for half-hour periods without any apparent difference in the behavior of the engine. At the end of the test the engine was very carefully examined and was found to be in excellent condition. If Congress should supply free denaturalized alcohol for fuel purposes Mr. Goebel said his firm would double its output and would also be able to build larger engines because of the certainty of cheap fuel. He thought the engines annually built by his firm for the use of free denaturalized alcohol would consume no less than 15,000,000 gallons of spirits.

Small Engines for the Farmer.

James C. Warnes of the engine department of the International Harvester Company said that that company had recently engaged in the manufacture of internal combustion engines. Continuing, he said:

"In our position as builders of a large number of such engines, requiring a fuel which is produced in limited quantities and which is often of an indifferent quality and a constantly increasing price, the question of the future fuel supply becomes one of most vital importance. Already the sale of engines in some sections of the country is rendered more difficult owing to the exorbitant price of gasoline, and yet the introduction on the farm of small explosive engines on an extensive scale has scarcely begun. The agriculturist at the present time recognizes more than ever before the general utility of the small engine on the farm; for example, in pumping water, grinding feed, sawing wood, operating churns and cream separators, threshing grain, shredding fodder, &c. With favorable prices on fuel its application can readily be extended to tractors, so that within a short time power driven grain harvesters, mowers, plows, corn harvesters, cultivators, and like implements may replace many of those in present use and thereby save the cost and keeping of an extra team.

"In view of the constantly increasing demand for gasoline, and because of the adverse effect of its increased cost on domestic sales in engines, and of the difficulty of manufacturers here sharing in the foreign trade, we cannot assume an attitude of indifference with respect to the present question. Furthermore, the fact that a single corporation can play fast and loose with the prices and qualities of petroleum products accentuates the need of fostering a competing fuel, in order to prevent a further increase in price and consequent arrest of development in vast and important industries."

Professor Thomson's Paper.

Prof. Elihu Thomson of the General Electric Company presented a paper which was followed by the committee with great interest. It was, in part, as follows:

"Gasoline as well as kerosene has the great disadvantage that it floats upon water and is distributed by water. It is a well known fact that it is commercially useless to attempt to extinguish burning gasoline or kerosene by water alone. The use of water may, in fact, be a positive disadvantage in floating the burning material over considerable places in spreading fire. No so with alcohol, which mixes with water in all portions, and which is at once diluted and prevented from remaining combustible.

"We have recently tested at the Lynn works of the General Electric Company a Deutz alcohol engine, a type of engine made in Germany especially for use with alcohol, and the results have been such as to prove without doubt the entire suitability of alcohol, if cheap enough, as a fuel for internal combustion engines. This particular engine is to be sent to the island of Cuba and coupled to a dynamo for lighting. It will be operated with the cheap Cuban alcohol, which is, I am informed, sold there at about 12 to 15 cents per gallon. A few gallons of this alcohol were obtained and used in our tests here, and it was found to be a high grade spirit, containing 94 per cent. alcohol by volume and 6 per cent. of water, or about 91 per cent. alcohol by weight.

"While it is not methylated or denaturalized, there is no question that the behavior in the engine of denaturalized or methylated spirit would be identically the same as with the pure grain alcohol. To obtain this sample of Cuban alcohol it was necessary that we pay an import tax of $4 per gallon, with other charges, which made the cost of the material used in testing enormous as compared with its actual value in Cuba, and I may here remark that, as in testing an engine of this kind a considerable quantity of alcohol will be used, manufacturers here in the United States would suffer a considerable disadvantage in building such engines as compared with those in a country where methylated spirit, untaxed, is obtainable. In fact, the cost of the material for testing the engines is probably a sufficiently strong deterrent just now to prevent the manufacture being taken up in the United States. The island of Cuba is, however, an excellent field for the use of such machinery, on account of the low cost of alcohol.

"It may be mentioned here that our experiments developed the fact that alcohol is suitable as a motor fuel even when it contains as high a percentage as 15 per cent. of water. Notwithstanding the fact that the heating value of alcohol, or the number of heat units contained, is much less than in gasoline, it is found by actual experiment that a gallon of alcohol will develop substantially the same power in an internal combustion engine as a gallon of gasoline. This is owing to the superior efficiency of operation when alcohol is used. Less of the heat is thrown away in waste gases and in the water jacket. The mixture of alcohol vapor with air stands a much higher compression than does a mixture of gasoline and air without premature explosion, and this is one of the main factors in giving a greater efficiency.

"The exhaust gases from the alcohol engine carry off less heat. They are cooler gases. It is well known that the exhaust gases from a gasoline or kerosene engine are liable to be very objectionable on account of the odor. In our tests of the Deutz alcohol engine there was absolutely no such objection with alcohol fuel, the exhaust gases being but slightly odorous, or nearly inodorous, but what odor there was was not of a disagreeable character.

"There is just now the beginning of a large development in the application of the internal combustion engine to the propulsion of railroad cars on short lines as feeders to the main lines. In this case an ordinary passenger car is equipped with a power compartment at one end, in which there will be installed an engine of, say, 200 horse-power of the internal combustion or explosion type. The growth of such a system is liable to be hampered in the near future by the cost of gasoline as a fuel, and the difficulties of using kerosene are still quite considerable. Especially is the exhaust likely to be offensive. In this case alcohol, which could be produced in unlimited amount, could be substituted.

"It may be mentioned in conclusion that the efficiency—that is, the ratio of the conversion of the heat units contained in the fuel into power—is probably higher in the alcohol engine than in engines operated with any other combustible, and doubtless, on account of the comparative newness of the alcohol engines, there is still room for some improvement in this respect."

Plea of Hardware Manufacturers.

A. N. Abbe of the American Hardware Company told the committee of the serious difficulty experienced by hardware manufacturers in securing fusel oil at a reasonable price for the production of brass goods, hardware, gas fixtures, brass and iron bedsteads and other metal articles. The oil is used in the preparation of enamels, lacquers, &c., and is a by-product of the manufacture of alcohol. During the past few years there has been a remarkable increase in the price of this material, as the demand has greatly exceeded the supply. Continuing, he said:

"The limited supply of fusel oil in this country has been wholly due to our antiquated policy of taxing industrial alcohol at the same rate as beverage spirits, the effect of this policy being to practically prohibit the use of grain or ethyl alcohol for industrial purposes.

"Fusel oil is produced commercially only in connection with the distillation of ethyl alcohol, and the quantity produced is therefore dependent on the extent to which the latter material is distilled. It is estimated that in order to secure one gallon of fusel oil the distillation of nearly 150 bushels of grain is necessary, so it can be readily understood that it would be impossible to profitably manufacture it otherwise than as a by-product in the distillation of ethyl alcohol.

"Twenty-five years ago the present uses of fusel oil in the manufacture of lacquers and enamels, and for other industrial purposes, were unknown, and the distillers of spirits and alcohol were compelled to dispose of this by-product for practically nothing. About fifteen years ago a small demand for it had arisen, and it was then sold at from 12 to 15 cents per gallon. As its value for various purposes was realized the price has greatly advanced, as will be seen by the following statement of prices of the crude oil during the past six years: 1898, 55 cents per gallon; 1899, 55 cents to 60 cents; 1900, 60 cents; 1901, 60 to 70 cents; 1902, 70 to 85 cents; 1903, 85 cents to $1.15; 1904, $1.25 to $1.50; 1905, $1 to $1.10; and 1906, $1.15 to $1.20.

"This marked increase in cost has been directly caused by the demand exceeding the supply, notwithstanding that a very large quantity, amounting to about 300,000 gallons annually, is imported from Germany. Fortunately for our manufacturers to whom fusel oil is a necessary material the production of ethyl alcohol in Germany is on a much larger scale than in this country. Owing to the liberal laws relating to the use of alcohol in the arts which have been in force in Germany for a number of years the total production of ethyl alcohol in that country has been greatly increased, the quantity distilled in 1902 being 223,899,120 proof gallons, or nearly 100,000,000 gallons more than was produced in this country in the same year. As the population of the United States is 50 per cent. larger than that of Germany, this country should be producing over 300,000,000 gallons annually.

"With the vastly greater amount of ethyl alcohol that would be distilled as the result of the adoption by this country of liberal alcohol legislation similar to that of Germany, the production of fusel oil would be correspondingly increased. The effect of this large increase in the supply would of course be to materially reduce the price, and the users of fusel oil, or lacquers made from it, would be benefited accordingly. Since for the reasons above stated the manufacture of fusel oil is not commercially possible except in connection with the distillation of ethyl alcohol, the encouragement of the production of such alcohol is the only method by which a reduction in the cost of fusel oil can be secured."

Favorable Action Probable.

On the 20th inst. the Ways and Means Committee will hear the representatives of the wood alcohol interests, who are opposed to the bill on the ground that it will injure their industry, which has been built up on the basis of the relatively high tax on grain spirits. On the conclusion of the hearings the numerous pending bills will be taken up, and it is the general belief that a carefully prepared measure will be reported to the House with a favorable recommendation. The prospect for the enactment of a satisfactory free alcohol law in the present Congress is excellent. W. L. C.

The Chicago Pneumatic Tool Company.

The statement of profits of this company for the year ended December 31, 1905, taken from its fourth annual report, is as follows:

Profits for the twelve months		$852,612.56
Depreciation of plant, including repairs and renewals	$115,344.94	
Written off for developing and perfecting new tools	12,581.91	— 127,926.85
		$724,685.71
Bond interest for the year	$115,000.00	
Sinking fund installment	50,000.00	— 165,000.00
		$559,685.71
Dividends aggregating 4 per cent. per annum		244,551.32
Balance carried to surplus		$315,134.39
Surplus as at December 31, 1904	$254,030.82	
Appropriation on account of development work and written off	32,873.06	— 221,157.76
Surplus for year 1905		315,134.39
Surplus carried forward		$536,292.15

The balance sheet as at December 31, 1905, is as follows:

Assets.

Real Estate, machinery, patents, good will, less reserves	$6,391,661.80
Stock of other companies and investments at cost.	1,310,017.41
Treasury bonds	200,000.00
Treasury stock	32,000.00
Cash in bank and on hand	152,702.61
Accounts and bills receivable, less reserves	894,391.67
Inventories, finished work and work in process	784,269.72
Sinking fund investment	235,675.00
Total	$10,000,718.21

Liabilities.

Capital stock issued		$6,145,800.00
First mortgage bonds issued		2,500,000.00
Interest accrued on bonds, payable January 1, 1906, and dividend payable January 25, 1906.		119,497.83
Accounts and vouchers payable		332,804.58
Bills payable		125,000.00
Sinking fund for redemption of bonds		235,675.00
Reserve for taxes and suspense items		5,648.65
(Contingent liability on bills discounted, $93,398.33)		
Surplus—Balance of surplus	$221,157.76	
Add net balance of profit and loss account	315,134.39	— 536,292.15
Total		$10,000,718.21

In his accompanying report to the stockholders, dated February 8, President J. W. Duntley says:

In my last year's report your attention was directed to improved trade conditions which prevailed during the last quarter of the year, and to the fact that our lines of tools and compressors had been developed and broadened, permitting the addition of new departments in order to extend the business of the company. This policy has been continued vigorously during the past year, resulting in the largest sales since the company was organized, and profits have been realized, as shown by statement hereto attached, amounting to 9.15 per cent. available for dividends, of which 4 per cent. has been appropriated by the directors for dividends declared, and the remainder, amounting to $315,134.39, has been carried to surplus account, as additional working capital required on account of the enlarged scope of our operations and the increasing volume of business being transacted.

During the past year the Consolidated Pneumatic Tool Company, Limited, London, has been developing the organization of the Fraserburgh plant, Scotland, and extending its operations until at the present time it is running to full capacity. Our foreign operations have been further enlarged during the year by the organization of the International Compressed Air & Electric Company, Berlin, which company acquired the business of Isaac G. Eckstein and is now conducting continental operations.

The company during the year acquired the business of the Philadelphia Pneumatic Tool Company, Philadelphia. In connection with this transaction it was found desirable to borrow temporarily the sum of $125,000, which item appears on statement as "bills payable." The company also acquired the business and plant of the Canadian Pneumatic Tool Company, Limited, Montreal, Canada, which company is now conducting the Canadian business.

Attention is called to the fact that of the authorized issue of $2,500,000 bonds, $200,000 are in the treasury and $208,000 have been retired for sinking fund purposes, leaving the outstanding issue $2,092,000. In addition to the assets acquired through the foreign organizations, approximately $350,000 have been spent in permanent betterments to plants, all of which has added to the securities underlying the outstanding issue of bonds. The excess of current assets at December 31, 1905, amounts to $1,248,412.94, showing an increase of over $590,000 since the company was organized four years ago. During this time it has earned 28 per cent., amounting to $1,683,959.36 for dividends, from which earnings 18 per cent., amounting to $1,059,794.15, have been appropriated by the directors for dividend purposes, the balance having been carried to surplus or appropriated for other purposes.

The capacity of the plants has been materially increased during the past year; notwithstanding this increase, our present capacity is insufficient and a further increase in capacity is under consideration.

The Shenango Iron & Steel Company.—This company, whose offices are in the Lewis Building, Pittsburgh, has started its puddling furnaces and muck bar and skelp mills at Wheatland, Pa., and is rolling iron skelp up to 30 inches wide. The bar mill, which contains 10, 14 and 18 inch trains, will be ready to start in the latter part of March or early in April. The product of the company will consist of muck bar, skelp and bars in iron exclusively. It will aim to turn out a high grade of iron bars for special purposes, paying particular attention to quality in all its products.

Germany's Pig Iron Production.—The production of pig iron in Germany and Luxemburg was 10,987,623 metric tons in 1905, as compared with 10,103,941 tons in 1904. The output of basic Bessemer pig was 7,114,885 tons, of foundry iron 1,905,668 tons, of acid Bessemer pig 425,237 tons, of "steel iron" and other spiegeleisen 714,335 tons, and of mill iron 827,498 tons. The Rhenish Provinces and Westphalia led with 4,376,640 tons, followed by Lorraine and Luxemburg with 3,520,697 tons, Silesia with 861,012 tons and the Saar district with 814,310 tons.

PERSONAL.

M. M. Garland has been appointed Surveyor of the Port at Pittsburgh, making his third term in that position. Mr. Garland is an ex-president of the Amalgamated Association.

F. M. Davis, president of the F. M. Davis Iron Works Company, Denver, Col., has retired and will be succeeded by his son, W. C. Davis. F. M. Davis purchased the Ensminger Iron Works in 1875 and for several years conducted the business under the name of the Ensminger & Davis Company, organizing the F. M. Davis Iron Works Company in 1891.

H. E. Schild, general superintendent of the Monterey Iron & Steel Company, Monterey, Mex., and O. Goldstein, superintendent of the steel works, have resigned. Mr. Goldstein left for Europe immediately. Henry Knoth has been appointed manager of the steel works and Reinhardt Daae, formerly chief draftsman, his assistant.

F. W. Harbord, the well known metallurgist, announces that with the consent of the India office he has removed from the Royal Indian Engineering College, Cooper's Hill, and has opened a laboratory and mechanical testing office at 16 Victoria street, Westminster, London, S. W. He will for the present carry on the analytical work for the Indian railroads.

Charles L. Cornell has been elected secretary of the Niles-Bement-Pond Company, to fill the vacancy caused by the death of E. M. C. Davis. Mr. Cornell also fills the office of treasurer. The other officers have all been re-elected.

Clyde M. Carr, secretary of Joseph T. Ryerson & Son, Chicago, left for California this week. He will be gone about three months.

George A. Mason of the American Steel & Wire Company, Kansas City, Mo., sailed February 6 for a three months' trip to Japan.

M. R. Nyman, who has been connected with the sales department of the Electric Appliance Company, Chicago, has been appointed manager of the Chicago office of the Buffalo Forge Company and the Buffalo Steam Pump Company.

James A. Milne, who for a number of years has been comptroller of the Allis-Chalmers Company, Milwaukee, has accepted the position of general manager of Allis-Chalmers-Bullock, Limited, Montreal, Canada. Mr. Milne is a native of Canada, having been born at Waterdown, Ont., in 1872. His association with the Allis-Chalmers Company dates from August, 1901, when he entered its employ as chief cost clerk. One month later he was appointed acting comptroller and in May, 1902, was formally elected to that position.

L. F. Bower, heretofore manager of the Allis-Chalmers Company's Bullock Electrical Works, Cincinnati, succeeds J. A. Milne as comptroller of the company at the general offices, Milwaukee, Wis. For a number of years Mr. Bower was secretary and treasurer of the Dickson Mfg. Company, Scranton, Pa., absorbed by the Allis-Chalmers Company in 1901.

Howard A. Knauss has been appointed superintendent of the Northern Iron Company's furnace at Standish, N. Y. He had been for some years superintendent of the Crane Iron Works furnaces at Catasauqua, Pa. He was presented with a diamond ring by the employees of the Crane furnaces on leaving Catasauqua.

Harry R. Hall has accepted the superintendency of the Crane Iron Works furnaces at Catasauqua, Pa., succeeding Howard A. Knauss.

E. E. Wood, formerly special sales agent cojointly with the Niles-Bement-Pond Company and the Pratt & Whitney Company, has taken an interest in the business of George T. Walcott & Son, Jackson, Mich., of which concern he will be general manager. It is expected that under Mr. Wood's management the present line of manufacture, which includes lathes, shapers and automatic rack cutters, will be extended, and it is possible that the plant will be increased in the near future.

John J. Tonkin, inventor of the boiler which was manufactured by the Tonkin Boiler & Engine Works, Oswego, N. Y., will sever his connection with the Oil Well Supply Company, Oswego, N. Y., to devote his time to other enterprises.

J. Walter Rhodes, president of the Cherry Valley Iron Company, Pittsburgh, has gone to Hampton Terrace, near Augusta, Ga., for a short vacation.

OBITUARY.

ANDERSON FOWLER.

Anderson Fowler, father of Arthur A. Fowler of Rogers, Brown & Co., died suddenly February 10 on the steamship Republic at Genoa, Italy, in his sixty-fourth year. He sailed from New York January 26 for a Mediterranean tour. He was born in the north of Ireland of English parents, and came to New York when 21 years old to engage in business with his brothers. He had lived in this city ever since. He was for many years managing director of Fowler Brothers, Limited, which, until its recent retirement from business, was one of the largest packing and provision houses in the world. After Fowler Brothers, Limited, went out of existence Mr. Fowler acquired large interests in iron and coal properties. At the time of his death he was president of the American Ventilating Company, vice-president of the Chapman Iron, Coal & Coke Company and a director of the Allegheny Ore & Iron Company, the Empire Steel & Iron Company, the J. B. & J. M. Cornell Company, the Northern Insurance Company, the Oppenheimer Institute, the Red Rock Fuel Company and the Pittsburgh & Fairmount Fuel Company. His charities were large and many. He was a leading member of the Methodist Episcopal Church and one of the foremost contributors to the support of the various educational and missionary movements of that organization. He was the treasurer of Drew Theological Seminary and for years had interested himself especially in the establishment of the self supporting missions of his church in South America. Immediately on the receipt of the sad news of his father's death Arthur A. Fowler sailed for Europe to take charge of his remains. The deceased is survived by a widow and nine children.

E. H. WILSON.

It was with universal regret that the Philadelphia iron trade learned of the death of E. H. Wilson of that city, which occurred February 11. It is no exaggeration to say that no man in the trade was held in higher esteem. He was born in Dover, Del., March 7, 1852, and began his business career in the iron trade in 1870 with C. W. Matthews, at that time the largest operator in Philadelphia. Four years later, in connection with J. B. M. Hirons and A. V. Kaiser, Mr. Wilson started business on South Third street, and in five or six years the members of the firm had become known as large and successful operators, which position they maintained throughout their entire connection. Mr. Kaiser withdrew from the firm in 1894 and still continues in business at the old stand, E. H. Wilson & Co. having removed to the Arcade Building. J. B. M. Hirons withdrew in 1896 and died in 1903. Mr. Wilson leaves a widow, a daughter and two sons, one associated in the business and the other in college.

JEROME C. TAFT, president of the Taft Machine Company, Providence, R. I., died suddenly February 8. He was the inventor of a carpet sewing machine which his company manufactures and of a sewing machine, and was well known as an expert in developing the inventions of others.

The courts at Pittsburgh have made an order authorizing the liquidating trustees of Zug & Co., Limited, to operate the Sable Iron Works in that city until the plant is sold.

Toronto reports state that several meetings of those interested have been held and a proposition has been considered to merge into one company the Dominion Iron & Steel Company, the Nova Scotia Steel Company, the Consolidated Lake Superior Company and the Dominion Coal Company.

A Record in Pig Iron Production.

January Output of Coke and Anthracite Iron, 2,068,893 Gross Tons.

Pig iron production increased in January, and the total make of coke and anthracite iron in the month was 2,068,893 gross tons, a gain of 23,175 tons over the total for December, which was also a month of 31 days. As compared with the previous high record month of October, 1905, the January production showed a gain of 15,719 tons. There is a net gain of nine in the number of furnaces in blast on February 1 over the number reported on January 1. Some of the additions to the ranks of producers are new furnaces of modern size and equipment—a new Cambria furnace at Johnstown, also a new furnace in the Mingo group at Mingo Junction, Ohio, while the third Monongahela furnace, which was put in in December came nearer in January to reaching a good working footing. The Pittsburgh district furnaces made a record in January with a total of 511,941 tons, as against 488,346 tons in December and 495,379 tons in October, the previous big month.

The active capacity on February 1 was 482,746 tons a week, as compared with 463,673 tons on January 1. The country is now producing pig iron at the rate of 25,000,000 tons a year for coke and anthracite, in addition to about 30,000 tons a month of charcoal iron.

The following table shows the production for January, as compared with the records for the preceding four months:

Monthly Pig Iron Production.

	September. (30 days)	October. (31 days)	November. (30 days)	December. (31 days)	January. (31 days)
New York....	102,419	111,503	113,098	120,016	119,097
New Jersey...	24,030	27,292	23,657	21,548	16,259
Lehigh Valley.	47,044	53,028	53,245	57,503	56,215
Schuylkill Val.	37,120	40,390	36,929	41,150	48,674
Lower Susquehanna and Lebanon Val.	69,997	71,901	68,400	65,907	75,214
Pittsburgh dis.	449,632	495,379	466,457	488,346	511,941
Shenango Val.	151,804	169,388	165,876	176,009	177,467
West. Penn...	100,882	107,880	106,327	114,559	109,695
Md., Va. and Kentucky....	77,230	81,539	84,209	79,749	83,704
Wheeling dis..	98,097	110,736	114,448	120,147	113,611
Mahoning Val.	153,758	166,465	154,363	162,052	162,075
Central and North. Ohio..	151,233	162,452	162,763	173,453	162,938
Hocking Valley and Hanging Rock	31,166	27,796	26,924	33,902	34,656
Ill.,Mich.,Minn., Wis., Mo. and Col.	242,733	251,864	267,210	225,947	222,736
Alabama	129,779	144,804	147,299	137,560	141,773
Tennessee, No. Carolina and Georgia	32,576	30,757	22,340	27,870	32,838
Totals....	1,899,500	2,053,174	2,013,635	2,045,718	2,068,893

Production of Steel Companies.—Returns from all the plants of the United States Steel Corporation, the Cambria, Pennsylvania, Maryland, Lackawanna, Wheeling, Ashland, Republic, Jones & Laughlin, La Belle, Bethlehem, Calumet and Colorado companies show the following totals of product month by month. We present also separately monthly figures of the production of spiegeleisen and ferromanganese, which is included in the total:

Production of Steel Companies.—Gross Tons.

	Pig.—Total production.— 1904.	1905.	1906.	Spiegeleisen and ferromanganese. 1905.	1906.
January	502,994	1,129,042	1,358,015	21,002	26,305
February	756,260	1,027,937	.....	22,431	....
March	913,412	1,232,255	.....	21,280	....
April	974,006	1,222,710	.....	20,038	....
May	927,534	1,287,438	.....	24,732	....
June	788,822	1,149,404	.....	21,761	....
July	694,892	1,114,409	.....	31,220	....
August	747,570	1,186,050	.....	27,461	....
September	936,494	1,262,033	.....	21,645	....
October	971,447	1,370,960	.....	26,799	....
November	962,384	1,334,644	.....	23,776	....
December	1,019,841	1,356,962	.....	29,481	....

Among furnaces blown out in January are Secaucus in New Jersey, one Paxton in the Lower Susquehanna Valley, West End in Virginia (banked), one stack of the Columbus (Ohio) Iron & Steel Company, Globe in the Hanging Rock district, and one Bessemer in Alabama.

The furnaces blown in in January include Detroit, Genesee in New York State, one Brooke in the Schuylkill Valley, one Edgar Thomson spiegel, one Cambria (new) at Johnstown, Pa., one Sheridan in the Lebanon Valley, one Mingo (new) in the Wheeling district, Allegheny in Virginia, two Illinois Steel Company stacks at South Chicago (one on spiegel), one Allen's Creek, Rockdale, and one Rockwood in Tennessee and Rising Fawn in Georgia. River furnace at Cleveland and one Hubbard furnace in the Mahoning Valley have blown in since the opening of the present month.

The table below gives the actual capacity of the coke and anthracite furnaces on February 1 and January 1. It shows that the 295 coke and anthracite furnaces in blast on February 1 were producing at the rate of 482,746 tons a week, as against 463,673 tons a week for 286 furnaces on January 1:

Coke and Anthracite Furnaces in Blast.

Location of furnaces.	Total number of stacks.	—February 1.— Number in blast.	Capacity per week.	—January 1.— Number in blast.	Capacity per week.
New York:					
Buffalo	12	12	26,540	11	24,536
Other New York...	10	4	3,770	3	2,565
New Jersey.....	8	3	3,360	4	3,868
Spiegel	2	1	182	1	183
Pennsylvania.					
Lehigh Valley.....	27	18	12,694	18	12,439
Spiegel	2	2	490	2	490
Schuylkill Valley...	13	11	10,995	10	9,290
Low. Susquehanna.	10	5	7,294	6	7,273
Lebanon Valley....	10	10	8,430	9	6,976
Spiegel	1	1	616	1	633
Pittsburgh dist....	40	39	112,105	39	109,281
Spiegel	4	4	3,496	3	3,514
Shenango Valley...	20	19	40,082	19	39,753
West. Penn.....	24	19	27,531	18	25,865
Maryland	5	4	7,595	4	7,357
Wheeling dist.....	14	14	29,055	13	27,128
Ohio:					
Mahoning Valley...	16	15	36,573	15	35,577
Cent. and Northern and Michigan....	19	17	38,472	17	38,192
Hocking Valley and Hanging Rock....	12	10	7,428	11	7,955
Illinois	19	16	38,651	15	36,490
Spiegel	2	3	1,396	2	1,120
Minnesota	1	1	1,277	1	1,277
Wisconsin	5	5	5,113	5	5,040
Missouri	1	1	1,134	1	1,029
Colorado	4	3	5,432	3	6,342
Spiegel	1	1	252	1	721
The South:					
Virginia	23	13	10,408	13	9,464
Kentucky	7	2	1,362	2	1,190
Alabama	46	27	32,011	28	31,505
Tennessee	16	14	8,152	11	6,620
Georgia	1	1	850	0	0
North Carolina.....	1	0	0	0	0
Totals.....	376	295	482,746	286	463,673

For a series of months the active coke and anthracite capacity fluctuated as follows in gross tons:

	Capacity per week.		Capacity per week.
February 1.....	482,746	January 1, 1904.....	185,636
January 1, 1906.....	463,673	December 1, 1903.....	244,156
December 1, 1905.....	475,814	November 1.....	273,715
November 1.....	460,449	October 1.....	353,142
October 1.....	445,468	September 1.....	360,197
September 1.....	412,563	August 1.....	353,681
August 1.....	410,088	July 1.....	384,825
July 1.....	408,617	June 1.....	388,178
June 1.....	443,092	May 1.....	373,496
May 1.....	452,031	April 1.....	386,215
April 1.....	439,564	March 1.....	347,424
March 1.....	403,157	February 1.....	335,339
February 1.....	405,792	January 1, 1903.....	346,073
January 1, 1905.....	377,879	December 1, 1902.....	336,617
December 1, 1904.....	357,846	November 1.....	330,110
November 1.....	334,249	October 1.....	337,837
October 1.....	319,249	September 1.....	328,243
September 1.....	291,573	August 1.....	328,745
August 1.....	246,092	July 1.....	303,793
July 1.....	272,301	June 1.....	337,492
June 1.....	336,107	May 1.....	337,627
May 1.....	368,244	April 1.....	331,140
April 1.....	337,257	March 1.....	316,039
March 1.....	308,751	February 1.....	325,440
February 1.....	273,692	January 1, 1902.....	291,992

The steel works furnaces made but a slight gain in January over their December record, the considerable

gain in the Pittsburgh district being offset by the poorer working of furnaces producing steel making iron in some other districts.

NEWS OF THE WORKS.

Iron and Steel.

The Lockhart Iron & Steel Company, McKees Rocks, Pittsburgh, maker of high grade iron, is installing a 10-inch Belgian train.

The new plant of the Pennsylvania Swedish Iron Company, at Cheswick, Pa., is now in full operation with plenty of orders ahead. The product will be charcoal iron blooms particularly adapted for the manufacture of charcoal iron boiler tubes. The output will be about 500 tons a month.

The entire 29 hot mills in the South works of the American Sheet & Tin Plate Company, South Sharon, Pa., are in full operation. The Humbert works of the company, located at South Connellsville, Pa., are still idle, with no prospects of being started at an early date.

The puddling department and muck bar mill of the Kittanning Iron & Steel Company, Kittanning, Pa., are in full operation. This company makes a high grade muck bar, which is sold in the open market, the plant having no finishing mills.

It is probable that the new blooming mill to be installed in the Ohio works of the Carnegie Steel Company, at Youngstown, Ohio, will not be put in until late this year. The plant is so busy turning out billets, sheet and tin bars, for which there is a heavy demand, that it has been decided to defer putting in the blooming mill until some time later in the year.

The Silgo Iron & Steel Company, Pittsburgh, is adding two new puddling furnaces to its plant at Connellsville, Pa., and is again making the diamond pattern wrought steel floor plates.

Wm. B. Scaife & Sons Company, Pittsburgh, Pa., has received a contract from the New York State Steel Company for a large tonnage of structural steel work in connection with its new plant at Buffalo, N. Y.

The Republic Iron & Steel Company has recently purchased two additional Allis-Chalmers vertical high and low pressure long crosshead blowing engines for installation in its Youngstown plant. These engines are practically duplicates of three others purchased less than a year ago, two of the high pressure and one of the low pressure vertical long crosshead type. The new engines will have high pressure 52-96 inch and low pressure 96-96 inch steam and air cylinders, with 60-inch stroke, each with a capacity of 45,000 cubic feet of free air per minute.

Globe Furnace of the Globe Iron Company, Jackson, Ohio, blew out for repairs January 23 and is expected to resume in April.

Cambria Furnace No. 7 of the Cambria Steel Company, Johnstown, Pa., the construction of which was begun in 1903 and suspended in 1904, was blown in in January. It is 22 x 85 feet, with an estimated annual capacity of 150,000 tons.

Mingo Furnace No. 4 of the Carnegie Steel Company, Mingo Junction, Ohio, was completed in January and blown in. It is 21½ x 90 feet and has an estimated annual capacity of 145,000 tons.

The report that several continuous mills in the Brown-Bonnell Works of the Republic Iron & Steel Company, Youngstown, Ohio, would be moved to the Valley Works in Youngstown is officially denied.

The Pennsylvania Steel Company, Steelton, Pa., has purchased additional ground adjoining its plant to make room for an extension to its open hearth department, to include probably six 50-ton open hearth furnaces. The details of its plans for this and other improvements have not yet been definitely settled

Alleghany Furnace of the Alleghany Ore & Iron Company, Iron Gate, Va., was put in blast January 17 after repairs.

The Bird Iron Company's furnace at Culbertson, Ohio, went into blast February 12.

The International Harvester Company, Chicago, will augment the steel output at its Bessemer steel plant at South Chicago by the installation of a new steel mill which will roll merchant bars and agricultural shapes. Plans are in preliminary state.

The tandem 8-inch mill at the Greenville works of the Carnegie Steel Company, Greenville, Pa., was started up February 13, and all the finishing mills are now in operation. It will be recalled that this plant was practically destroyed by fire a short time ago. Remarkably fast time has been made in rebuilding.

General Machinery.

The Atlas Mfg. Company, Fostoria, Ohio, formerly the Atlas Safe Company, has begun the manufacture of gas engines and automobile parts and will also continue its foundry business.

J. W. Arbuckle of Homer and Wallace Morgan of Rushville, Ind., have bought a half interest in Madden & Co., manufacturers of brick and tile-making machinery, Rushville, Ind. The plant will be enlarged and moved into new buildings.

The Merrill Drop Hammer Company has been organized to take over the business of E. W. Merrill, Jr., 78 South Tenth street, Brooklyn, N. Y., manufacturer of drop hammers.

The Smyth-Despard Company, dealer in mill supplies, machinery and tools, Utica, N. Y., has purchased the machinery and stock of the True Belting Company, and is manufacturing leather belting in connection with its regular machinery and supply business. On March 1 the company expects to move both departments to the Crouse building at John and Broad streets.

The Manufacturers' Machinery Company, New Orleans, La., has been organized by men prominent in the machinery trade in that section, with a capital stock of $100,000 and is now located in a three-story building, 734-736 Poydras street, where it will carry a large stock of engines, boilers, pumps, saw mill machinery, etc. It is the intention of the company to act as agent in the South for manufacturers of all kinds of machinery, and the company will be pleased to correspond with manufacturers who are desirous of establishing a responsible agent in New Orleans. In connection with its general machinery business it is erecting a small machine shop for repairs and for the manufacture of several devices now on the market and patented by Edward Hanak, who is superintendent. The company also has an option on the three-story building next door to its present quarters, which it will take over in the fall. Sydney Marshall is president; Harry K. Ivens, vice-president, and Walter M. Gates, secretary and treasurer.

The American Car & Foundry Company has purchased for its works at Manchester, England, 100 tools consisting of Boyer hammers and drills, from the Consolidated Pneumatic Tool Company, London, which is a foreign branch of the Chicago Pneumatic Tool Company, Chicago, Ill.

F. E. Paige, Batavia, N. Y., who commenced repairing automobiles on Jackson street in 1904, removing to 21 West Main street in 1905, has now increased his plant to include all kinds of machine repairs.

The Blaisdell Machinery Company, Bradford, Pa., has received orders for three of its new type of self-oiling air compressor the past month, two of them being for the Lacey-Buek Iron Company, Birmingham, Ala., and the other one for the J. S. Schofield's Sons Company, Macon, Ga.

The Livingston Mfg. Company, Rockland, Maine, manufacturer of stoneworking, blacksmith and contractors' tools, is moving into its new plant, which is 66 x 125 feet and one story, making the entire building 66 x 190 feet, 65 feet of it two stories. The older part of the building will hereafter be used as a storehouse, the machinery being moved into the new building.

The Anderson Forge & Machine Company, Detroit, Mich., has purchased the plant and business of W. H. Anderson & Sons and reorganized with a capital stock of $150,000. The new company has recently installed a full equipment of drop hammers, presses, etc., intending to go extensively into the manufacture of drop forgings.

The Hamilton Machine Tool Company, Hamilton, Ohio, has increased its capital stock from $300,000 to $350,000.

The Thornton Machinery Company, Providence, R. I., dealer in machine tools and other machinery, has leased the building in Harris, R. I., a suburb of Providence, formerly occupied by the Lamphear Machine Company. The building will be used as a warehouse.

The Harriman Motor Company, Hartford, Conn., manufacturer of small motors, has leased the factory owned by the Franklin Taylor estate, in Glastonbury, Conn., a suburb of Hartford, and will remove its business from Hartford.

The Robins Conveying Belt Company, New York, has recently secured an order for three belt conveyors for the Depue plant of the New Jersey Zinc Company. Among other orders the company now has on hand are one from F. G. Boas, Philadelphia, Pa., for a 14-inch belt conveyor, and an order for a picking belt conveyor from Fraser & Chalmers of South Africa.

The Illinois State Reformatory, Pontiac, Ill., is about to install a complete forge shop equipment, consisting of down draft forges and blast and exhaust fans, furnished by the B. F Sturtevant Company, Boston, Mass.

The Pusey & Jones Company, Wilmington, Del., has purchased additional property, but has not yet decided upon any definite plans as to building upon this recently acquired ground.

The Thames Motor Company, Groton, Conn., has been incorporated to manufacture motors, with capital stock of $10,000. The incorporators are Thomas W. Avery, Charles E. White, Belton A. Copp and Courtland E. Colver. The company is about to begin manufacturing, its shop being mostly equipped.

Power Plant Equipment.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has secured a contract for traction railway equipment at St. Petersburg, Russia, which is said to amount to $1,675,000. The power of the road will be generated at Imatra Falls, Finland, and will be transmitted 1020 miles. It is officially stated that

this company entered orders in January for $3,750,000 worth of electrical equipment, this being the largest month's business in its history.

W. H. Nimick, Otis H. Childs and J. B. Shea, the committee representing bondholders of the Brown-Corliss Engine Company, Milwaukee, Wis., have made an offer to purchase the claims of unsecured creditors on the basis of 30 cents on the dollar, the offer being conditional on immediate acceptance.

The Empire Electric Power & Supply Company, Carthage, Mo., has increased its capital stock from $10,000 to $25,000 and has contracted for approximately $8000 worth of new machinery, consisting of one 150 horse-power natural gas engine manufactured by S. M. Jones Company, Toledo, Ohio; one 100-kw. generator from the Western Electric Company, Chicago, as well as other equipment.

The Plainfield Electric Light Company, Plainfield, Ind., has been incorporated with $25,000 capital stock to build and operate a light, heat and power plant. The directors are James F. Lynch, William W. Wilson and Meda S. Lynch.

The Ladysmith Lighting Company has been incorporated at Ladysmith, Wis., with a capital stock of $25,000, and C. A. Hoffman, G. E. Newman and L. E. McGill, incorporators.

The Michigan Central Woolen Company, Centreville, Mich., is in the market for two tubular boilers, 14 or 16 feet long and 4½ or 5½ feet diameter, good second-hand boilers preferred. The boilers are to be used for supplementary purposes and must develop about 100 horse-power and carry from 85 to 95 pounds pressure.

Foundries.

Plans and terms have been agreed upon for the sale of the Racine Malleable & Wrought Iron Company's plant, Racine, Wis., to Cleveland parties, principally the owners of the Eberhard Mfg. Company of that city. It is the intention to enlarge the plant. J. P. Davies, president and general manager of the Racine Company, will remain with the company. Although the actual transfer of the plant has not yet been made it is believed the exchange will be made in a few days.

The Utica Pipe Foundry Company, Utica, N. Y., will have its new foundry in operation in about one month and has begun work on a new plant for the manufacture of cast iron water and gas pipe, which it expects to have in operation in about four months. The new foundry will have a daily capacity of 15 tons and the pipe foundry about 200 tons.

The Acme Steel & Malleable Iron Works, Buffalo, N. Y., expects to complete a large addition to its foundry about March 1. When the new addition is completed the present capacity of 5000 tons will be doubled and the number of employees increased from 300 to 550.

The Baker & Shevlin Company, Saratoga Springs, N. Y., will soon complete the addition to its foundry, 40 x 108 feet, which will be equipped with an electric traveling crane. The addition will increase its melt of iron about 20 per cent.

The "M" Mfg. Company, founder, has been incorporated at Watertown, Wis., with a capital stock of $25,000 and F. W. Menkey, F. W. Moldenhauer, H. R. Moldenhauer, and Louis Dornfeld, incorporators.

The Elwood Heater Company will build a foundry and machine shop at Elwood, Ind.

The Bucyrus Steel Castings Company, Bucyrus, Ohio, has awarded a contract to the Indiana Bridge Company, Muncie, Ind., for structural work for a new foundry building which will be built this spring.

The Bridgeport Foundry Company, Bridgeport, Conn., is to erect a new machine shop, 50 x 100 feet and one story. It will be located on Carbon street.

Bridges and Buildings.

The Wisconsin Bridge & Iron Company, Milwaukee, Wis., was awarded contract at $6180 for the construction of a bridge over the Peshtigo River in Wisconsin.

The Herzog Iron Works, St. Paul, Minn., has purchased an acre tract of land across the street from its present plant for the extension of its business. The property is improved with a frame building, which will be remodeled for the use of the iron works. The light ornamental iron and wire work department will be transferred to this building, the room it now occupies at the old plant being needed for heavier work.

Fires.

The power house of the University of Pennsylvania, Philadelphia, Pa., was destroyed by fire last week. The loss is about $50,000.

The Toledo Boiler Company's Works, Toledo, Ohio, was burned last week.

The main portion of the implement works of Frost & Wood, Smith Falls, Ont., was destroyed by fire last week. The machine shop, with all its machinery, and the carpenter and paint shops are understood to be total wrecks.

E. W. Whitmore, formerly treasurer of the Prentice Brothers Company, Worcester, Mass., who has just begun the manufacture of a new miter box in that city, was a loser by a fire February 8, his machine tools being badly damaged and a large number of finished parts ruined.

Hardware.

The Anchor Fence Mfg. Company, Omaha, Neb., has been incorporated under the laws of Nebraska. It will make a specialty of anchor clamps, farm, railroad and ornamental fence, farm and lawn gates, steel stock tanks, tree guards, steel stays, hitching posts, an indestructible metal post and other articles incidental to the iron and wire fencing business. The company controls the patents that were formerly owned by the Western Anchor Fence Company for the Anchor fence clamp in the States of Nebraska, Kansas, Colorado, Wyoming, New Mexico and Utah. The officers are F. M. Russell, president; Selwyn Doherty, vice-president, and Conrad H. Young, secretary-treasurer.

The Variety Mfg. Company, Chicago, manufacturer of folding doors, elevator doors, iron and tin-clad fire doors, as well as other specialties, has moved from 77-83 W. Lake street to larger quarters at Sacramento and Carroll avenues. New and improved machinery has been installed in the new quarters.

The Standard Computing Scale Company, Detroit, Mich., has in course of erection a three-story brick factory, 68 x 138 feet. The machinery in the building will be electrically operated and the building will be lighted by electricity.

The Automatic Metal Turning Company has been incorporated in Massachusetts to take over the business of the Lewis H. Dodge Company, Boston. The new company will continue to operate the plant at 148 Purchase street, manufacturing screws, nuts and screw machine goods in general. The George Q. Hill Company, 142 Purchase street, acts as sole selling agent for the company.

The Mishawaka Folding Go Cart Company has been incorporated at Mishawaka, Ind., with $15,000 capital stock. The directors are Joseph DeLorenzi, Ernest Timmerhoff and Charles A. Ostram.

August Schmitt & Sons have incorporated at Evansville, Ind., with $15,000 capital stock to manufacture tin, copper and sheet iron ware.

The Anderson Tool Company, Anderson, Ind., has increased its capital stock to $20,000.

The Baker Mfg. Company, Evansville, Wis., manufacturer of Monitor pumping and geared mills, has amended its articles of incorporation, increasing its capital stock from $400,000 to $600,000.

The O. C. Little Pulley Coating Company, manufacturer of hardware specialties, Menasha, Wis., has reorganized and will hereafter be known as the Onward Mfg. Company. The building belonging to the company on Main street will be remodeled and an office building erected immediately adjoining. The principal articles to be manufactured include a furniture sliding shoe, the Awiright window fastener, a pulley coating, commutator compound and a new automatic cushion door catch. If present plans do not miscarry these articles will be placed on the market in about 90 days. The officers of the company are: President, O. C. Little; vice-president, J. Schreibeis; secretary and treasurer, Silas Bullard.

The A. W. Wagner Mfg. Company, Chicago, has incorporated with a capital stock of $10,000. The company, which is located at 40 Dearborn street, will manufacture the Safety tackle block wire stretchers, including the Ellwood post hole diggers and hardware specialties. A. W. Wagner is president and general manager; M. P. Wessling, vice-president; H. J. Wanner, secretary and treasurer.

Hobson & Co.., manufacturers of agricultural implements, wagons, carts and wheels, New York office 17 State street, announce the removal of their works to the concrete and steel buildings of the new and enlarged plant at Easton, Pa. The change carries with it improved shipping facilities, doubled capacity, electric power and a generous increase of new and modern equipment.

The Wapakoneta Anchor Company, Wapakoneta, Ohio, has been formed by W. T. Emmons, W. S. Wyckoff, S. P. Heck and others and will engage in the manufacture of an iron fence post anchor. A new factory will be erected.

W. H. Hobert of Medina and Henry Miller of Cleveland have bought the old foundry of Carline & McGuire at Medina, Ohio, and will make a number of improvements with a view to manufacturing hollow ware.

Miscellaneous.

The Seattle Car Mfg. Company, Seattle, Wash., has increased its capital stock from $10,000 to $100,000, and is installing a lot of new machinery to take care of business on hand. The company's plant is insufficient to take care of its needs, and it is looking for a larger site. The officers are: William Pigott, president; M. J. Pigott, vice-president; W. S. Burt, secretary; D. E. McLaughlin, treasurer, and T. G. Haywood, general manager. In addition to the officers the following well-known men of Seattle are stockholders: H. C. Henry, president of the National Bank of Commerce; J. W. Clise, president of the Washington Trust Company; John Schram, treasurer of the Washington Trust Company; E. M. Wilson of the Seattle Steel Company, J. A. Moore, Dan Kelleher, Frank T. Hunter and Victor Hugo Smith.

The General Fire Proofing Company, Youngstown, Ohio, is making large additions to its plant and installing new machinery. The annual meeting of this company was held last week and the report of operations for the past year was very satisfactory. Myron I. Arms was elected president; George D. Wick and A. P. White, vice-presidents, and W. H. Foster, secretary and treasurer.

The Reeves Pulley Company, Columbus, Ind., has increased its capital stock from $80,000 to $85,000.

The Wide Range Drill Chuck & Tool Company has been incorporated at Muncie, Ind., with $50,000 capital stock. The directors are Wm. A. Schmidt, Chas. J. Malone and Geo. A. O'Neil.

The Edmondson Concrete Machinery Company has been incorporated at South Bend, Ind., with $50,000 capital stock. The directors are Robert Edmondson, Richard C. Railsback and Joseph H. Wiley.

The Acme Mfg. Company, St. Paul, Minn., has been incorporated with a capital stock of $200,000. The principal object of the corporation is to manufacture an air tight journal box, a recent invention. It is probable that no business will be transacted until about March 1. The incorporators are Thomas C. Daggett, George Griggs of St. Paul and Charles O. Lindquist.

The Brass Foundry & Heating Company, Peoria, Ill., has purchased the property at 709 South Adams street and will erect on it a store building and factory. Plans for the building are not yet completed.

The Standard Steel Car Company, Pittsburgh, is making some very large additions to its plant at Butler, Pa., by which its capacity for making steel cars will be increased to 75 or 80 cars per day. These improvements include an addition, 70 x 800 feet, to the main building, which is 200 x 2000 feet, and an addition 150 x 700 feet to the wooden car works for steel underframe cars. In addition to the buildings a high horse-power Westinghouse gas engine will be installed, as well as a full equipment of modern Shaw cranes. The Butler Car Wheel Company, a constituent company to the Standard Steel Car Company, is now erecting a new plant immediately adjoining, which will be ready within three or four months.

The Interborough Rapid Transit Company, New York, has just placed an order with the Electric Cable Company, New York, for 15 miles of cables insulated with Voltax, the new potential insulating compound which has just been placed on the market. This compound, which for the past eight years has been given severe tests, is said to offer so many advantages over rubber insulation that it is rapidly coming into prominence. Recent tests of the material made by the Electrical Testing Laboratories, New York, show that this material can withstand a voltage 100 per cent. greater than rubber insulation and has withstood high potential insulation, resistance and melting point tests that no other compound yet discovered has withstood. The costs of this material are about 20 per cent. less than rubber insulation.

Johnson & Hibbard, 14 Birge avenue, Westfield, Mass., is a new firm which will manufacture trucks of all descriptions, including special trucks for mills and factories. The members of the firm are Walter E. Johnson and Samuel H. Hibbard.

The Greist Mfg. Company, New Haven, Conn., manufacturer of sewing machine attachments, is erecting an addition to its works, 43 x 135 feet and three stories. No new machinery will be required, the purpose being to spread out equipment already in the works.

The Ideal Comb Company, Northboro, Mass., contemplates the erection of a large factory building, which will have both steam and water power and generating equipment for electric lighting.

The Cumberland Telephone & Telegraph Company, Nashville, Tenn., will build and equip a large manufacturing plant for the production of switchboards, cable terminal boxes, telephone boxes and bells and other similar apparatus.

The Edmondson Concrete Machinery Company, South Bend, Ind., has been incorporated by Richard C. Railsback and Joseph H. Wiley. The company has purchased a factory equipment, including 5 horse-power motor, shaper, drill press, emery wheels, &c., from Hill, Clarke & Co., Chicago. A cement block machine, concrete mixers and other concrete machinery will be manufactured.

The Albany Steam Trap Company, Albany, N. Y., has purchased the Doncaster property, on North Pearl street, for $10,000, where it will move its business as soon as the building can be remodeled to suit its purposes. The company intends to expend as much more money in remodeling the building and when completed it will have a plant 40 x 80 feet and four stories high.

The Bailey-Farrell Mfg. Company, Rankin, Pa., has sold its lead pipe plant to the Acheson Mfg. Company, capitalized at $250,000.

The Forsberg Spring & Gear Company, Rome, N. Y., has increased its capital stock from $5000 to $25,000.

The Gilleland Car & Foundry Company, St. Louis, Mo., recently incorporated with a capital stock of $5,000,000, intends to erect a modern plant for the building of all kinds of railroad cars, particularly the Gilleland vestibuled stock cars and automatic grain cars. Neither the site nor plans for the several buildings have been selected, but the plant will be large enough at the start to produce 60 complete cars per day. The officers and directors are: Edgar B. Gilleland, president; A. J. Biddison, vice-president; Edwin M. Markel, Jr., secretary; Edwin M. Markel, Sr., treasurer; Geo. H. Willis, general manager; J. S. Fogarty, Wm. A. Knowles, T. E. Gilleland and Wm. M. Wilson.

Several additions are being made to the saddlery manufactory of A. T. Steffans & Co., Newark, N. J. The structures consist of a three-story foundry, 50 x 50 feet; four-story japanning shop, 25 x 30 feet, and a two-story blacksmith shop, 25 x 30 feet. The buildings are well under way and it is understood that machinery requirements are being purchased.

The Bristol Brass Company, Bristol, Conn., manufacturer of brass and German silver products, voted at its annual meeting to increase its capital stock from $500,000 to $700,000. Of the new stock it is probable that $100,000 will be issued at an early date, while the balance may not be issued until next year. The shares will be offered the stockholders at par. The company states that this increase in capital does not mean extensions of the works.

The Edward F. Smith Company, New Haven, Conn., has been incorporated in Connecticut with capital stock of $20,000 to manufacture wire cloth, bank and office railings and other metal goods. Manufacturing space has been leased. The incorporators are O B. Blackburn, New York, and Edward F. Smith and Harry F. Richards, New Haven.

The American Iron & Steel Mfg. Company.

The sixth annual report of this company, for the year ending December 31, 1905, presents the following statement by President J. H. Sternbergh:

"The year 1905 has been characterized by the greatest activity in our line of manufacture. We had a larger number of customers, received a greater number of orders and shipped more goods in value and in tonnage than ever before in our history. We have increased the value of our property by the expenditure of $175,060.55 for betterments and extensions. We have paid regular dividends on our preferred and common stock, added $50,000 to reserve fund to provide for depreciation of buildings and machinery, and have carried $359,633.42 surplus forward, making our undivided profits on December 31, 1905, $650,462.69. The outlook for 1906 is most promising."

The balance sheet as of December 31, 1905, is as follows:

Assets.		
Cash	$149,714.76	
Accounts receivable (discount, doubtful and worthless accounts written off)	756,655.70	
Inventory (at cost prices)	1,549,769.05	$2,456,139.51
Real estate, plants and equipments	$4,905,567.57	
Deduct reserve fund to provide for depreciation	600,000.00	4,305,567.57
Total		$6,761,707.08
Liabilities.		
Wages accrued, not due	$68,534.98	
Bills payable	198,108.33	
Accounts payable	294,601.08	$561,244.39
Preferred stock	$3,000,000.00	
Common stock	2,550,000.00	5,550,000.00
Balance subject to the payment of dividends on common and preferred stock, due January 1, 1906		650,462.69
Total		$6,761,707.08

The Western Bar Iron Association.—This new organization was formed in Chicago last week and is composed of independent iron mills west of Youngstown, Ohio. S. C. Leonard, Detroit, was elected president; George M. Clark, New Albany, Ind., vice-president, and James H. Nutt, Youngstown, Ohio, secretary and treasurer. An Executive Committee was appointed consisting of S. P. Llewellyn, East Chicago; R. M. Myers, Terre Haute, Ind., and S. C. Leonard. The objects of the association are the general good of the independent companies in the bar iron trade in Ohio, Illinois and Indiana. It will also deal as a body with the Amalgamated Association in fixing wage scales from year to year, the major portion of this work devolving on Mr. Nutt, who was engaged in a similar capacity for many years with the Republic Iron & Steel Company. It is understood that the headquarters will be at Youngstown, Ohio, with Mr. Nutt in charge.

The Iron and Metal Trades

January establishes a new record for Pig Iron production, our statistics showing a total of 2,068,893 gross tons of Coke and Anthracite Iron, as compared with 2,045,718 tons in December, an increase of 23,175 tons. The previous record was 2,053,174 tons, in October, 1905. Production on February 1 was at a still greater rate than in January, the weekly capacity active at the opening of this month being 482,746 tons, against 463,673 tons on January 1, so that Pig Iron is now being made at a rate above 25,000,000 tons a year, in addition to 30,000 tons a month of Charcoal Iron. The United States Steel Corporation for the past seven weeks has had 88 out of 89 furnaces in blast and now has 87 active, since the blowing out of one South Chicago furnace. Every furnace affiliated with the Bessemer Pig Iron Association is now going.

The condition of the Iron market, in brief, is one of steadiness and strength, without the recurrence of record buying which characterized so many weeks in the second half of 1905. Though new buying is smaller than in such weeks, some mills are still booking more material than they are delivering. Premiums for early delivery are less than they were and in some cases have disappeared.

In respect to Tin Plates, Sheets, Wire Products and Pipe the situation is unusual. At this time of year the plants of the Steel Corporation in these lines ordinarily accumulate stock against the spring demand. This year accumulation has been impossible. Of the Corporation's Sheet mills 100 per cent. were in operation last week and of Tin Plate mills 90 per cent., Steel not being available for all.

Foreign Steel markets show increasing strength, and recently, for the first time, prices in finished lines abroad have risen to a parity with those on this side, in some cases being higher.

Structural business, both current and prospective, is far beyond precedent or expectation. In the territory immediately tributary to Pittsburgh 100,000 tons of Steel will be required for work now being figured on. Plans have come forward fully a month earlier than usual. In New York City the bulk of the 200,000 tons under negotiation is expected to be placed by early spring.

Railroads continue to place supplementary Rail orders, though original contracts were thought to cover this year's needs. Among such buying the past week are 5300 tons for the Boston & Maine, 12,500 tons for the Pennsylvania Railroad and 5000 tons for the Chesapeake & Ohio. Trolley lines bought 15,000 tons in the past week. In export Rails is mentioned a good sized order for Panama.

An advance of $1 a ton has been made in Hoops. Bar Iron continues to approach the level of Steel, after selling $8 to $10 a ton higher.

The Pig Iron market has been quiet, apart from a burst of activity in the Chicago district, where over 30,000 tons of Foundry Iron is under negotiation. Southern shipments have been heavy, in view of the advance in freights on March 1. Leading Southern sellers maintain recent prices, but $14 for No. 2 is still heard of and lower grades are easier. The Steel Comporation has bought 15,000 tons of Bessemer from Valley furnaces for shipment to Chicago.

The approach of the annual labor conferences between Lake shippers and the various unions projects the possibilities of a tie up into the Ore situation. Apart from the uncertainty in this direction Lake Superior Ore shipments promise to open unusually early, as they will need to if the record tonnage talked of is moved in 1906.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Feb. 14, 1906.	Feb. 7, 1906.	Jan. 17, 1906.	Feb. 15, 1905.
PIG IRON:				
Foundry No. 2 Standard, Philadelphia	$18.50	$18.50	$18.50	$17.50
Foundry No. 2 Southern, Cincinnati	16.75	16.75	16.75	16.25
Foundry No. 2, Local, Chicago	*19.00*	19.00	19.25	17.50
Bessemer, Pittsburgh	18.35	18.35	18.35	16.35
Gray Forge, Pittsburgh	**17.35**	17.35	17.25	16.00
Lake Superior Charcoal, Chicago	*20.00*	20.50	20.50	18 50
BILLETS, RAILS, &c.:				
Bessemer Billets, Pittsburgh	**27.00**	26.00	26.00	24.00
Forging Billets, Pittsburgh	**32.00**	32.00	30.00	26.00
Open Hearth Billets, Phila	*29.00*	29.00	29.50	28.00
Wire Rods, Pittsburgh	34.00	35.00	34.00	31.00
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00
OLD MATERIAL:				
O. Steel Rails, Chicago	*15.00*	16.00	16.50	15.00
O. Steel Rails, Philadelphia	*17.25*	17.25	18.25	18.00
O. Iron Rails, Chicago	*21.50*	22.50	23.00	20.50
O. Iron Rails, Philadelphia	*23.00*	23.00	24.50	23.00
O. Car Wheels, Chicago	19.00	19.00	19.00	16.25
O. Car Wheels, Philadelphia	18.75	18.75	18.75	16.00
Heavy Steel Scrap, Pittsburgh	*16.00*	16.50	17.00	16.00
Heavy Steel Scrap, Chicago	*13.50*	14.50	15.00	14.00
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia	*1.73½*	1.83½	1.83½	1.73½
Common Iron Bars, Chicago	*1.75*	1.75	1.80	1.65
Common Iron Bars, Pittsburgh	*1.85*	1.85	1.90	1.65
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.54½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.40
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.64½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.50
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.64½
Beams, Pittsburgh	1.70	1.70	1.70	1.50
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.64½
Angles, Pittsburgh	1.70	1.70	1.70	1.50
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.50
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.55
SHEETS, NAILS AND WIRE:				
Sheets, No. 27, Pittsburgh	2.30	2.30	2.30	2.20
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Cut Nails, Pittsburgh	**1.80**	1.80	1.75	1.80
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25
METALS:				
Copper, New York	*17.87½*	17.87½	18.75	15.25
Spelter, St. Louis	*5.95*	5.95	6.45	5.97½
Lead, New York	*5.40*	5.75	5.80	4.55
Lead, St. Louis	*5.35*	5.52½	5.85	4.35
Tin, New York	**36.60**	36.20	36.40	29.25
Antimony, Hallett, New York	**16.00**	14.25	14.25	8.50
Nickel, New York	40.00	40.00	40.00	40.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.69	3.69	3.69	3.74

Chicago.

FISHER BUILDING, February 13, 1906.

There has been a pronounced revival of the Pig Iron demand in this market during the week and inquiries aggregating 30,000 tons are now up for consideration. Sales of small lots ranging from 1000 to 3000 tons have been more numerous than at any time this year and this renewed activity has strengthened both Northern and Southern quotations. In finished lines the largest transactions include contracts for the Plate and Shape requirements for three additional lake boats aggregating 14,000 tons and 9000 tons of Rails for electric roads. Additional Cast Iron Pipe orders placed by Northwestern roads and municipalities total 4500 tons. The weakness of the Scrap market is reflected in the Iron Bar trade and quotations are now generally on a basis of 1.75c. Steel Bar tonnage, notwithstanding the fact that most of the large consumers have anticipated shipments, is extremely light, and the advance on Hoops of $1 a ton which became effective February 9 is not generally understood by the trade on account of the prevailing conditions in the Steel Bar, Band and Hoop market. Bands remain unchanged in price and the spread between Hoops and this product is greater than it has been in recent years. Specifications on Rails, the original contract calling for 40,000 tons, and rolling stock for the Chicago & Southern Indiana Railroad, fostered by John R. Walsh, are held up temporarily, and until the sale of this property is consummated nothing definite can be learned in regard to the carrying out of these improvements. In anticipation of a strike of the coal miners Western Iron and Steel mills are contracting for stocks to tide them over from four to six weeks, but if the mines should remain idle a longer period the mills would be compelled to close, as it is

impracticable to carry larger stocks. Coal prices have been advanced by Illinois operators 50c. a ton, and at the meeting held last week the action of the Indianapolis conference was ratified, and it was decided to close all the mines in the State April 1 unless miners decided to renew the scale on the present basis. Coke prices have not strengthened, however, and by-product Coke for prompt delivery has declined to $5.80, while heavy consignments of Connellsville Coke continue to be sacrificed at prices ranging from $5.15 to $5.40.

Pig Iron.—The lull has been broken by the heavy inquiries which have come out during the week. The Allis-Chalmers Company is in the market for 15,000 tons of Foundry Iron for third quarter delivery, of which 6000 tons is Southern and the remainder Northern, and 3000 tons has already been purchased. Another consumer has closed for 2000 tons out of a total of 5000 tons asked for and the remainder will be closed in a few days. Still another foundry is in the market for 5000 tons, and further prices are asked on scattering lots of 1000 to 3000 tons. Several contracts for 1000 and 2000 ton lots for first half delivery have also been closed, and the market, which was inclined toward a still lower basis, has been considerably strengthened. No. 2 Southern is still quoted at $14, Birmingham, by many furnaces, although several large interests well sold up through the first half maintain a nominal price of $14.50. Northern No. 2 is held at $19 to $19.25, Chicago, and Lake Superior Charcoal has sold during the week at $20. No. 2 furnace of the Iroquois Iron Company, which was out for relining was blown in last week, but the available tonnage of Iron in this market will not be increased by its operation, as its output has been well sold ahead. We quote at Chicago as follows:

Lake Superior Charcoal	$20.00 to $20.50
Northern Coke Foundry, No. 1	19.50 to 19.75
Northern Coke Foundry, No. 2	19.00 to 19.25
Northern Coke Foundry, No. 3	18.50 to 18.75
Northern Scotch, No. 1	20.00 to 20.25
Ohio Strong Softeners, No. 1	20.05 to 20.30
Ohio Strong Softeners, No. 2	19.55 to 19.80
Southern Coke, No. 1	18.15 to 18.40
Southern Coke, No. 2	17.65 to 17.91
Southern Coke, No. 3	17.15 to 17.40
Southern Coke, No. 4	16.65 to 16.90
Southern Coke, No. 1 Soft	18.15 to 18.40
Southern Coke, No. 2 Soft	17.65 to 17.90
Southern Gray Forge and Mottled	16.15 to 16.40
Malleable Bessemer	19.25 to 19.50
Standard Bessemer	19.55 to 19.80
Jackson Co. and Kentucky Silvery, 6 %	21.30
Jackson Co. and Kentucky Silvery, 8 %	23.30
Jackson Co. and Kentucky Silvery, 10 %	25.30

Billets.—On account of the inability of the Illinois Steel Company to meet consumers' requirements, Forging Billets for prompt shipment are in big demand, and from $35 to $36 a ton can be readily secured. The American Steel & Wire Company is still out of the market as a seller of Rods, and the independent Wire interests are compelled to look to the independent producers for their supply. Speculative Rods have been offered in this market by dealers at $34.50, but the supply is extremely limited and regular mill quotations continue at $36 to $37.

Rails and Track Supplies.—Electric roads are now placing contracts for extensions more freely than for many months and the total week's business aggregates 9000 tons. As the Rail mill of the Illinois Steel Company is practically booked through the remainder of the year, on standard sections, no further tonnage is being accepted from steam roads, and Western lines are now compelled to place their requirements with Eastern mills. The decision of the United States Steel Corporation to produce Basic Rails at its new plant near Toleston, Ind., is of the utmost interest to the Rail trade, being a departure from the practice which has prevailed ever since Rails were produced in the North. Specifications for Track Supplies are unusually heavy and are in excess of mill shipments. Quotations are unchanged, as follows: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50c.; carload lots, 1.75c.; Spikes, 2.10c.; Track Bolts, 2.65c. to 2.75c., base, Square Nuts. The store prices on Track Supplies range from 15c. to 20c. above mill prices. Light Rails, 30 to 45 lb. sections, $27 to $28; 25-lb., $28 to $29; 20-lb., $29 to $30; 16-lb., $30 to $31; 12-lb., $31 to $32, and lighter Sections down to 8-lb., $38 to $40, f.o.b. mill. Standard Sections are unchanged at $28, f.o.b. mill, full freight to destination.

Plates.—The Plate requirements for three additional lake steamers were placed with the Illinois Steel Company this week, aggregating 6000 tons. Within the past ten days specifications on general business have been coming in more freely and deliveries are being gradually deferred. Business, however, is comparatively light, and Eastern mills are eagerly seeking all the tonnage that is offered and are in position to make deliveries in from two to three weeks. Quotations are firm and unchanged, as follows: Tank quality, ¼-inch and heavier, wider than 6¼ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76½c.; 3-16 inch, 1.86½c.; Nos. 7 and 8 gauge, 1.91½c.; No. 9, 2.01½c.; Flange quality, in widths up to 100 inches, 1.86½c., base, for ¼-inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86½c.; Flange quality, 1.96½c. Store prices on Plates are as follows: Tank Plate, ¼-inch and heavier, up to 72 inches wide, 2c. to 2.10c.; from 72 to 96 inches wide, 2.10c. to 2.20c.; 3-16 inch up to 60 inches wide, 2.10c. to 2.20c.; 72 inches wide, 2.35c. to 2.45c.; No. 8 up to 60 inches wide, 2.15c. to 2.25c.; Flange and head quality, 25c. extra.

Structural Material.—The contract for the Steel for the Cook County Building has not yet been placed, although the Wm. Grace Company is the lowest bidder on the general contract which will be awarded by the County Commissioners before the end of the week. It is probable that the tonnage will be awarded to the American Bridge Company. The Shapes for three additional lake steamers were placed with the Carnegie Steel Company, aggregating 8000 tons. Specifications for the Field Museum will be available shortly, the Steel requirements of which will aggregate 10,000 tons. Material from stock continues to be held on the basis of 2.25c. to 2.75c., although the demand at present is not as heavy as during the closing months of last year. Mill quotations are unchanged, as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86½c.; Angles, 3 to 6 inches, ¼-inch and heavier, 1.86½c.; Angles, larger than 6 inches on one or both legs, 1.96½c.; Beams, larger than 15 inches, 1.96½c.; Zees, 3 inches and over, 1.86½c.; Tees, 3 inches and over, 1.91½c., in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Sheets.—Little new business is being booked by the mills and specifications are all on old contracts at much lower prices than are now prevailing. Shipments from warehouse are comparatively light, which is customary at this season, but stocks are heavy. Nevertheless, distributers continue to specify freely in order to take out the full tonnage for which they contracted. Quotations are unchanged, as follows: Blue Annealed, Nos. 9 and 10, 1.86½c. to 1.91½c.; Nos. 16 and 17, 2.06½c. to 2.11½c.; Box Annealed, Nos. 18 to 20, 2.26½c. to 2.31½c.; No. 27, 2.46½c. to 2.51½c.; No. 28, 2.56½c. to 2.61½c.; Galvanized Sheets, Nos. 10 to 14, 2.61½c.; Nos. 17 to 21, 2.86½c.; Nos. 22 to 24, 3.01½c.; Nos. 25 and 26, 3.21½c.; No. 27, 3.41½c.; No. 28, 3.61½c.; No. 30, 4.11½c. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10c. to 2.20c.; Nos. 12 and 13, 2.15c. to 2.25c.; Nos. 14 and 15, 2.20c. to 2.30c.; No. 16, 2.30c. to 2.40c.; Box Annealed, Nos. 18 to 20, 2.50c. to 2.60c.; Nos. 22 to 24, 2.60c. to 2.70c.; No. 26, 2.65c. to 2.75c.; No. 27, 2.70c. to 2.80c.; No. 28, 2.80c. to 2.90c.; No. 30, 3.25c. to 3.35c. Galvanized from store: Nos. 10 to 20, 3c. to 3.10c.; Nos. 22 to 24, 3.15c. to 3.25c.; No. 26, 3.35c. to 3.45c.; No. 27, 3.55c. to 3.65c.; No. 28, 3.75c. to 3.85c.; No. 30, 4.85c. to 5.05c.

Bars.—On Friday, February 9, Hoops were again advanced $1 a ton, although Bands remain unchanged. Practically all of the large Western coopers are covered through the first half of the year, and the object of this advance is not very well understood by the trade. While new business on Steel Bars is light, specifications are very heavy, and with few exceptions large consumers are anticipating shipments. The weakness of the Scrap market is reflected in Iron Bars, which are now openly quoted at 1.75c. We revise quotations as follows: Iron Bars, 1.75c.; Steel Bars, 1.66½c., both half extras; Hoops, 2.06½c., extras as per Hoop card; Bands, 1.66½c., as per Steel card; Soft Steel Angles and Shapes, 1.66½c., half extras. Store prices are as follows: Bar Iron, 2.20c. to 2.25c.; Steel Bars, 1.85c. and as high as 2c. is asked on certain scarce sizes; Steel Bands, 1.85c. to 1.90c., half extras; Soft Steel Hoops, 2.20c. to 2.25c., full extras.

Merchant Pipe.—The Merchant Pipe trade, while more active than at this season last year, continues to suffer from low prices, and indications do not point to an improvement until well along in the spring when a general resumption of building operations will greatly increase consumption. An inquiry for 50 miles of Line Pipe of small diameter reached Western mills this week. Official discounts on car lots, which are shaded one point, are as follows: Black Steel Pipe, 78.35 per cent. on the base sizes ¾ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from one and one-half to two points higher. From store in small lots Chicago jobbers are quoting 76½ to 77 per cent. on Black Steel Pipe, ¾ to 6 inches.

Boiler Tubes.—The demand for general consumption is light and the railroads continue the biggest factors, so far as new tonnage is concerned. Quotations, however, are fairly well maintained. Official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2½-inch and smaller and lengths over 18 feet, and 2½-inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1½ inches	40	35	42½
1¾ to 2¼ inches	50	35	35
2½ inches	52½	35	30
2¾ to 5 inches	60	47½	42½
6 inches and larger	50	35	..

Merchant Steel.—Western mills are catching up on deliveries on Agricultural Steel, notwithstanding the fact that many consumers are anticipating shipments. As most of the contracts do not expire until July 1, new tonnage is light. Quotations are firmly maintained as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up

1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1¼ inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91½c.; Flat Sleigh Shoe, 1.71½c.; Concave and Convex Sleigh Shoe, 1.86½c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21½c.; Railway Spring, 1.86½c.; Crucible Tool Steel, 6½c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Cast Iron Pipe.—The cities of Toledo, South Bend and Rockford closed for their Cast Iron Pipe requirements last week, aggregating 1500 tons, and two Northern roads purchased 3000 tons for water lines and culverts. Prices are firm but unchanged, as follows: Water Pipe, 4-inch, $31; 6, 8, 10 and 12 inch, $30; over 12-inch, $29, with $1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Coke.—Notwithstanding the threatened Coal strike, by-product Coke is lower and for prompt shipment it is offered at $5.80, although on contracts extending through the first half higher prices would be asked. There is no dearth of consignment Coke in this market and to avoid demurrage charges, sales continue to be made at prices ranging from $5.15 to $5.40 Chicago. At the prices now ruling on both Furnace and Foundry Coke it is more profitable for producers to manufacture this material and dump it into this market to find quick sale than to sell it at prices now prevailing or which will probably prevail in the next 30 days at least, even in the event of a strike. Illinois Coal operators have advanced their prices 50 cents a ton and almost without exception Western mills are contracting for large tonnages to provide a stock to carry them over for at least 30 days if the miners and operators fail to agree.

Old Material.—Quotations continue to decline, and dealers are sacrificing their material to avoid further losses. No. 1 Railroad Wrought is freely offered at $16 to $16.50 and No. 2 has sold as low as $15 during the week. While consumers are well covered, material at extremely low prices readily finds a buyer. Most of the dealers throughout the last upward movement failed to appreciate to what extent Western mills provided for their future requirements and most of the high prices that prevailed during the closing months of last year were largely fictitious and were established by the dealers outbidding one another. In the event of a coal strike, which will result in the closing of most of the Western iron mills, still lower values are certain to prevail, while, on the other hand, the continuous operation of these plants will result in a fairly strong market during the spring months, as a large volume of the Scrap which is largely tied up until April on account of severe weather has already come out. The range of prices paid by large consumers to producers and dealers, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails	$21.50 to $22.00
Old Steel Rails, 4 feet and over	16.00 to 16.50
Old Steel Rails, less than 4 feet	15.00 to 15.50
Heavy Relaying Rails, subject to inspection	27.00 to 27.50
Old Car Wheels	19.00 to 19.50
Heavy Melting Steel Scrap	13.50 to 14.00
Frogs, Switches and Guards	14.50 to 15.00
Mixed Steel	13.50 to 14.00

The following quotations are per net ton:

Iron Fish Plates	$17.00 to $17.50
Iron Car Axles	23.50 to 24.00
Steel Car Axles	19.50 to 20.00
No. 1 Railroad Wrought	16.00 to 16.50
No. 2 Railroad Wrought	15.00 to 15.50
Locomotive Tires, smooth	14.25 to 14.50
Railway Springs	14.50 to 15.00
No. 1 Dealers' Forge	12.50 to 13.00
Wrought Pipes and Flues	11.25 to 11.50
Mixed Busheling	10.75 to 11.00
Iron Axle Turnings	12.00 to 12.50
Soft Steel Axle Turnings	12.00 to 12.50
Machine Shop Turnings	11.50 to 12.00
Cast Borings	10.00 to 10.50
Mixed Borings, &c.	9.50 to 10.00
No. 1 Mill	9.50 to 10.00
No. 2 Mill	8.00 to 8.50
No. 1 Boilers, cut to Sheets and Rings	11.00 to 11.50
No. 1 Cast Scrap	13.50 to 14.00
Stove Plate and Light Cast Scrap	12.00 to 12.50
Railroad Malleable	14.00 to 14.50
Agricultural Malleable	13.00 to 13.50

Metals.—The metal market is on the down grade, lower prices prevailing on Copper, Tin and Lead. A feeling of optimism pervades the trade, however, and confidence is expressed that a change for the better is not far distant. We quote: Casting Copper, 18c. to 18½c.; Lake, 18¼c. to 18¾c.; Pig Tin, car lots, 37¾c. to 38¼c.; small lots, 38½c. to 39½c.; Spelter, prompt delivery, 6½c. to 6¾c. for car lots; Lead, Desilverized, 5.62½c. to 5.87½c. for 50-ton lots; Corroding, 6.15c. to 6.40c. for 50-ton lots; on car lots, 2¼c. per 100 lbs. higher; Sheet Zinc is $7.75 list, f.o.b. Laselle in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 15½c.; Heavy Copper, 15¼c.; Copper Bottoms, 14¼c.; Copper Clips, 15¼c.; Red Brass, 14¼c.; Red Brass Borings, 12¼c.; Yellow Brass, Heavy, 10¾c.; Yellow Brass Borings, 9¾c.; Light Brass, 8¼c.; Lead Pipe, 4¾c.; Tea Lead, 4½c.; Zinc, 4¾c.; Pewter, No. 1, 24c.; Tin Foil, 29c.; Block Tin Pipe, 27½c.

Philadelphia.

REAL ESTATE TRUST BUILDING, February 12, 1906.

There has been very little change in the Iron and Steel trades during the past two or three weeks, and it is extremely difficult to decide whether the tendency is toward improvement or the reverse. From some points of view the situation is strong. In others it inclines a little in the other direction, so that until there is a further change, it is almost a "toss up" to determine which side will dominate. There is certainly an enormous consumption, and as far as that goes it would be difficult to imagine more satisfactory conditions than those that now prevail. The buying movement in Pig Iron is not particularly heavy, but the urgency for shipments is very great, so that the cross currents are somewhat confusing. The impression is that the fear of a Coal strike is causing a demand for quick shipments, so that in case of emergency the mills may be fairly supplied with material. Still there is no doubt that Pig Iron is scarce, and under the most favorable circumstances it will be several weeks before the furnaces will be able to catch up, while a Coal strike would cause endless conmplications. Requirements for several months to come have been amply provided for, and for the present there is not much disposition to go beyond that. Buyers are very urgent in regard to deliveries, however, and there is quite a probability that during the next two or three months the furnace capacity will be pretty well strained, which, of course, implies that the finishing departments will be equally well employed. In regard to the later months of the year, there is a somewhat conservative feeling. There is no reason for expecting anything unfavorable, yet there has been a long period of prosperity during which the capacity for producing Pig Iron increased from 8,623,000 tons in 1896 to 15,878,000 tons in 1901, and is conservatively estimated at 27,500,000 tons in 1906. The United States is a great country, and has by no means reached the zenith of its prosperity, but every forward movement has been followed by a reaction of more or less importance, and many conservative people are inclined to the opinion that the turning point will be reached during 1906, unless conditions are developed of an unexpectedly favorable character. This cannot be regarded as an unwarrantedly pessimistic view, considering the immense progress that has been made during the past ten years, and the further fact that capacity keeps on growing, and to maintain present conditions there must be a corresponding and continued increase in consumption. This is probably the crucial point in the whole business. It is not impossible that consumption may be maintained, but until a reaction of more or less importance has been met with it is considered doubtful if the prospective increase in production can be absorbed at the present level of prices.

Pig Iron.—The market is steady but not very active. Buyers are pushing hard for deliveries, and there are few that would not be glad to get most of their March Iron in February, and some of their April Iron in March. But they are not seriously concerned in regard to deliveries during the last half of the year, and that pretty well tells the whole story. There will certainly be a large consumption during the next three months, and there may be one equally great during the later months; but the first is sure, while the other is problematical, which probably explains the attitude of buyers. Some take the ground that, as high costs of production will be in force at that time, Pig Iron cannot decline, but experience has shown that when the demand falls off prices fall off. Be that as it may, buyers with few exceptions are not engaging much material for the last half of the year. They may want as much Iron as ever, but they are not sure of it, and are therefore biding their time until further developments. It is the opinion of the trade that, no matter what the ultimate outcome will be, buying will not be important during the next few weeks. There is, of course, very little Iron unsold up to June, so that it will not require much new business to take care of the unsold portion, but it is becoming a question of absorbing interest to know what tonnage will be wanted during the last half of the year. That the capacity for supply will be the largest on record is regarded as certain. Whether it will be wanted or not is uncertain, and at what prices it can be marketed is also an uncertainty, although that will naturally depend on the proportion between supply and demand. There is, therefore, enough uncertainty to keep people guessing, but too much to permit of heavy engagements until the outlook becomes clearer than it is at the present time. The possibility of a coal strike is probably the most serious matter that confronts the trade at the moment, but beyond that is the question of crops, which may assume considerable importance in the not very distant future. A crop year equal to 1905 would be likely to give as great an impetus to business during the last half of 1906 as the 1905 crop gave in that year. A fair average crop would carry with it some uncertainty in regard to

maintaining present conditions, while distinctly poor crops could hardly fail to have a very adverse influence. There are possibilities in other directions which might become important, or they may die unnoticed, but the coal situation and the crop situation are matters that are bound to have an important influence, favorable or the reverse, which time alone can tell. Foreign markets have taken rather a weak turn, so that taking everything into account it is quite likely that the next two or three weeks will be somewhat dull in comparison with the recent activity. Prices are about the same as last week, and for Philadelphia and nearby deliveries may be quoted as follows:

No. 1 X Foundry	$19.00 to $19.50
No. 2 X Foundry	18.50 to 18.75
No. 2 Plain	17.75 to 18.25
No. 2 Southern	18.75 to 19.00
Standard Gray Forge	16.50 to 17.00
Basic	18.00 to 18.10
Low Phosphorus	24.50 to 25.50
Bessemer	19.50 to 19.75
Malleable Iron	19.00 to 19.25

Steel Alloys.—The market is a little easier for late deliveries, but spot lots are almost any price holders see fit to ask. Exact quotations cannot be given, but approximately prices are as quoted below, the outside figures being for the first and second quarter's shipments, the inside for the last half:

Silico Spiegel, 10 and 18 per cent.	$43.00 to $50.00
Ferrosilicon, 50 per cent.	92.00 to 95.00
Spiegeleisen, 20 per cent.	38.00 to 45.00
Ferromanganese, 80 per cent.	105.00 to 150.00

Muck Bars.—There is little or no demand, so that prices are more or less nominal at $28 to $29, f.o.b. seller's mill.

Steel.—There is a very good demand, with a considerable amount of business done at about $29 for large lots and from that to $30 for smaller orders. Forging Billets command $33 to $38.

Plates.—There is a good demand for Plates, mostly in medium sized lots, but nothing unusually heavy. Mills are extremely busy, and as yet see no prospect of easing up for a long time to come. Early deliveries command a slight premium, although quotations for ordinary deliveries are unchanged, as follows:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel	1.73½	1.78½
Flange or Boiler Steel	1.83½	1.88½
Marine, A. B. M. A. and Commercial Fire Box Steel	1.93½	1.98½
Marine	2.13½	2.18½
Locomotive Fire Box Steel	2.23½	2.28½

The above are base prices for ¼-inch and heavier. The following extras apply:

	Extra per 100 pounds.
3-16-inch thick	$0.10
Nos. 7 and 8, B. W. G.	.15
No. 9, B. W. G.	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00

Structural Material.—The situation is much the same as it has been for months, although there is a slight improvement as regards deliveries. The increased output is beginning to make itself felt, and is expected to be still more pronounced as the season advances, although as yet many of the mills are a long way behind. Prices are unchanged as last quoted: Beams, Channels and Angles, 1.83½c to 2c., delivered.

Bars.—The demand has fallen off considerably, and at the moment there is very little inquiry. Steel Bars are easier, and as Iron Bars have been selling at relatively high prices the easing up in the latter should not be much of a surprise. Be that as it may, the market is extremely dull, and desirable orders are not hard to place at 1.73½c. for Refined Iron, or Steel Bars at 1.63½c.

Sheets.—There is a little better demand for Sheets, although prices are unchanged, and small and medium sized lots are quoted as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 to 26, 2.60c.; No. 27, 2.70c. and No. 28, 2.80c.

Old Material.—The demand is extremely light, buyers being unwilling to bid for anything at the present time. Holders seem to have confidence in a better market later on, and as a rule are not disposed to recede from their asking prices, except for material that must be moved at once. Bids and offers for deliveries in buyers' yards are as follows:

Scrap Steel Rails	$17.25 to $17.50
No. 1 Steel Scrap	16.50 to 17.00
Low Phosphorus Scrap	22.00 to 23.00
Old Steel Axles	20.00 to 21.00
Old Iron Axles	26.50 to 27.50
Old Iron Rails	23.00 to 24.00
Old Car Wheels	18.75 to 19.00
Choice Scrap, R. R. No. 1 Wrought	19.50 to 20.50
No. 1 Yard Scrap	18.00 to 19.00
Long and Short	17.50 to 18.00
Machinery Scrap	16.00 to 16.50
Wrought Iron Pipe	15.00 to 15.50
No. 1 Forge Fire Scrap	15.50 to 16.00
No. 2 Light Ordinary	12.00 to 12.50
Wrought Turnings	13.50 to 14.00
Axle Turnings, Choice Heavy	14.00 to 15.00
Cast Borings	10.25 to 10.75
Stove Plates	12.50 to 13.00
Grate Bars	12.00 to 12.50

Pittsburgh.

PARK BUILDING, February 14, 1906.—(*By Telegraph.*)

Pig Iron.—In addition to the sale of 16,000 tons of Bessemer Iron by the Bessemer Pig Iron Association to the United States Steel Corporation at $17.25, Valley furnace, for first quarter delivery we also note a sale of 500 tons to the Union Steel Casting Company of this city at $17.50, Valley furnace. There is a fair inquiry for Pig Iron, and it is confidently believed that a buying movement will set in about March 1, as it is said that a number of leading consumers have very light stocks, and will be compelled to buy very soon. Buying of Iron may also be influenced to a large extent by the prospective Coal strike, and it is said that the chances at this time are more than equal for a strike. It may possibly be confined to the anthracite region, but may also extend to the Bituminous mines. It is said that the leading Coal interests rather favor a strike at this time, as they have large stocks of Coal piled up and are well fortified to make the fight which, they believe, must come sooner or later. We note a fair inquiry for Foundry Iron, Northern brands of No. 2 being held at $17.25 to $17.50, Valley furnace, or $18.10 to $18.35, Pittsburgh. Northern Forge Iron is held at $16.50, Valley furnace, or $17.35, Pittsburgh, and a local consumer is in the market for a round tonnage but will probably buy Southern, which is held at about $12.75, Birmingham, or $17.10, Pittsburgh. Ths Southern market on Pig Iron, however, is weaker, and it is likely this price could be shaded.

Steel.—There is still great trouble in getting Steel for prompt shipments. This is particularly true of Sheet and Tin Bars, and the outside Sheet and Tin Plate mills find it very difficult to get Bars fast enough to keep running steadily. Bessemer Billets are held at about $27 to $27.50, and we note a sale of about 500 tons made by a dealer at $27.50, delivered, carrying a freight rate of 90c. Sheet and Tin Bars in random lengths on regular contracts are held at $27, delivered, to mills in the Pittsburgh district, to which price actual freight to outside points of delivery is added, an advance of 50c. a ton being charged for Cut Bars. Open Hearth Billets are exceedingly scarce, and for prompt delivery command $28 at maker's mill and higher.

(*By Mail.*)

The United States Steel Corporation has exercised an option on 16,000 tons of Bessemer Pig Iron at $17.25, Valley furnace, which it secured about two weeks ago from the Bessemer Pig Iron Association. This purchase practically takes up all the surplus which the association had for first quarter delivery. Negotiations are also under way for the sale of a round tonnage of Basic Iron, and if these go through it will take a good deal of Iron that has been pressing the market for some time, and which has weakened prices to some extent. The absolute minimum on Bessemer Iron for the general market seems to be $17.50, Valley furnace, and on small lots $17.75 is sometimes quoted. Basic Iron is lower than Bessemer and is held at about $17, Valley furnace, but on a firm offer this might be shaded about 25c. a ton. There is only a fair inquiry for Foundry Iron, and the Stirling-Cahall Boiler Company, which was in the market about a week ago for 2000 tons, has decided not to buy for the present. Northern brands of No. 2 Foundry Iron are held at $17.25 to $17.50, Valley furnace, but several furnaces that are not very well sold up might possibly accept $17, at furnace, on desirable tonnage. Steel continues very scarce, Bessemer Billets being held at $27 to $27.50 and Open Hearth $28 to $29, Pittsburgh. The Scrap market continues very dull and prices are weaker, Heavy Melting Scrap having sold in the past week as low as $16, Pittsburgh. Coke seems to be a little firmer in price, probably due to the danger of a Coal strike, which if it comes will undoubtedly means higher prices for both Coal and Coke. The tonnage of new orders being placed in Finished Iron and Steel is lighter than for some time, and the mills are catching up on deliveries all along the line. The only change in prices is an advance of $1 a ton on Hoops made last week, fixing the price at 1.90c., Pittsburgh.

Ferromanganese.—Ferro for prompt shipment continues to bring high prices, and we note a sale of about 20 tons of Foreign, 80 per cent. for spot delivery at $150, Pittsburgh. For delivery this and next month $125 a ton continues to be quoted, and for later deliveries from $90 to $100 is asked.

Muck Bar.—We continue to quote best grades made from all Pig Iron at $31.50 to $32, Pittsburgh, the leading producer holding to latter price. Eastern mills are offering Muck Bar at slightly lower prices, delivered in the Pittsburgh district.

Steel Rails.—A Western road has placed a contract for about 40,000 tons and an Eastern road for about 50,000 tons, and in addition other smaller contracts have been

laced. Trolley roads continue to be large buyers of Standrd Rails. Light Rails are active, and prices are firm as ollows: 8-lb., $36; 10-lb., $32; 12-lb., $30; 16-lb., $29; 0-lb., $28.50; 25 to 45 lb., $27.50 to $28, maker's mill.

Rods.—We note an active demand for both Bessemer nd Open Hearth Rods, which are scarce for prompt delivery. We quote $34 to $34.50. Chain Rods are about $35, Pittsburgh.

Skelp.—Only a fair amount of new tonnage is being placed, but the mills are filled up on contracts on which they are much behind on deliveries. Prices continue very strong, and we quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.70c. to 1.75c., and Sheared Iron Skelp, 1.80c. to 1.85c., Pittsburgh. These prices are for ordinary widths and gauges.

Structural Material.—No local contracts of importance were placed in the past week, but a good deal of tonnage is pending, which is expected to be given out very shortly. The new Frick Building will be 24 stories in hight and will take about 8000 tons. Deliveries from the mills are better than for some time, not due to any lack of tonnage, but rather to the favorable weather, which allows them to turn out their maximum output. Prices are firm, and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.75c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c. base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—The American Shipbuilding Company, Cleveland, has taken contracts for three more lake boats, which will require 6000 to 7000 tons of Plates, and practically all of this tonnage will come to Pittsburgh mills. The general demand for Plates is lighter than for some time and better deliveries are being made, some of the smaller mills agreeing to make shipments within two weeks from date of order. Prices are firm, with the exception that on very narrow sizes of Plates some of the small mills are slightly shading prices. We quote: Tank Plates, ¼ inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge	$0.10
Gauges Nos. 7 and 8	.15
Gauge No. 9	.25
Plates over 100 to 110 inches	.05
Plates over 110 to 115 inches	.10
Plates over 115 to 120 inches	.15
Plates over 120 to 125 inches	.25
Plates over 125 to 130 inches	.50
Plates over 130 inches	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)	.10
Complete Circles	.20
Boiler and Flange Steel Plates	.10
Marine, "A. B. M. A."	.40
Still Bottom Steel	.30
Locomotive Fire Box Steel	.50

Shell Grade of Steel is abandoned.

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within ten days from date thereof, discount of ½ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—Shipments from the mills continue heavy, both on Black and Galvanized Sheets, and there is still more or less trouble in getting prompt deliveries of Bars which interfere with operations to some extent. New business being placed in Sheets is of fair volume, but the large trade covered pretty far ahead some time ago and is specifying very liberally on these contracts. Prices are fairly strong, and we quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 2c.; Nos. 13 and 14, 2.05c.; Nos. 15 and 16, 2.10c.; Nos. 17 to 21, 2.15c.; Nos. 22 to 24, 2.20c.; Nos. 25 and 26, 2.25c.; No. 27, 2.30c.; No. 28, 2.40c.; No. 29, 2.55c., and No. 30, 2.65c. Galvanized Sheets: Nos. 10 and 11, 2.35c.; Nos. 12 to 14, 2.45c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.70c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.25c.; No. 28, 3.45c.; No. 29, 3.70c., and No. 30, 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at $1.65 per square and Galvanized Roofing Sheets, No. 28 gauge, at $3 per square for 2½-inch corrugations. Jobbers charge the usual advances over these prices for small lots. On a desirable order it is possible that some mills might shade the above prices about $1 a ton.

Bars.—New orders in both Iron and Steel Bars are lighter than for some time, and the market on Iron Bars is not quite so firm. However, the mills have large contracts on which buyers are specifying freely, and shipments from the mills continue very heavy. On Steel Bars the mills are from six weeks to two months or longer behind on deliveries. We quote Refined Iron Bars, rolled from all Muck Bar, at 2c., Pittsburgh, while Common Iron Bars, made from partly Scrap, are held at about 1.85c., Pittsburgh. We quote Steel Bars at 1.50c., base, half extras, for carloads and larger lots.

Hoops and Bands.—February 9 the four leading mills that roll Steel Hoops, these being the Pittsburgh Steel Company, Carnegie Steel Company, Sharon Steel Hoop Company and Atlanta Steel Hoop Company, advanced prices $1 a ton, or to the basis of 1.90c., Pittsburgh. New tonnage is only fair, but the mills have heavy contracts on which buyers are specifying quite freely. We quote Steel Hoops at 1.85c., and Bands to be used for cooperage purposes at 1.85c., the latter carrying full Hoop and Band extras. Bands for other than cooperage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f. o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

Tin Plate.—New business in Tin Plate is light, and some of the independent mills are operating only to about half capacity, partly due to lack of orders, but partly to scarcity of Tin Bars, on which deliveries are very unsatisfactory. The mills are running mostly on contracts placed some time ago before prices were advanced, and it is said a good part of this tonnage was taken as low as $3.25 per base box. We quote $3.50 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days. Some mills allow a rebate of 5c. a box on the above price to the large trade.

Merchant Steel.—New tonnage is not as large by any means as it was some time ago, but the mills are very busy on contracts placed last year by Implement makers and other consumers and on which they are specifying very freely. The large trade is pretty well covered on Shafting, but new demand is fairly active. Prices continue firm, and we quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ⅞ and 1 inch, 2c., and 1⅛-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades.

Railroad Spikes.—New business being placed is heavy, and some large inquiries are in the market, the mills being well sold up for several months ahead. The open weather which has allowed track laying to go on without interruption is largely responsible for the continued heavy demand. We quote $2 to $2.05 per 100 lbs., Pittsburgh.

Spelter.—The demand is very quiet, and prices are weak and somewhat lower. We quote prime grades of Western at 5.90c., St. Louis, equal to 6.02½c., Pittsburgh.

Merchant Pipe.—There is a seasonable demand for Merchant sizes, and the mills have a good deal of tonnage on their books for delivery in the next two or three months. Prices continue low on Steel Pipe, the extreme discount to the large trade being 81 per cent. off on Merchant sizes. Prices on Iron Pipe are firmer, and the mills that make a specialty of rolling Iron Pipe are able to secure prices from two to three points higher than on Steel. Official discounts are as follows:

Merchant Pipe.

	Jobbers, carloads.			
	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
	%	%	%	%
⅛ and ¼ inch	72	56	69	53
⅜ inch	74	60	71	57
½ inch	76	64	73	61
¾ to 6 inches	80	70	77½	67½
7 to 12 inches	75	60	72½	57
Extra strong, plain ends:				
⅛ to ⅜ inch	65	53	62	50
½ to 4 inches	72	60	69	57
4½ to 8 inches	68	56	65	53
Double extra strong, plain ends:				
½ to 8 inches	61	50	58	47

Discounts to consumers in small lots are one point higher than above.

Boiler Tubes.—We note an active demand from the railroads, but the demand from the general trade is quiet. Prices are firm, discounts being as follows:

Boiler Tubes.

	Iron.	Steel.
1 to 1½ inches	41	46
1¾ to 2¼ inches	41	58
2½ inches	46	60
2¾ to 5 inches	53	66
6 to 13 inches	41	58

Iron and Steel Scrap.—The market is in a very unsatisfactory condition, the demand being quiet and prices weak. One of the largest consumers of Scrap in the Pittsburgh district placed an embargo on it yesterday, and will not take in any more for some time. As stated before, there is a good deal of Scrap in the hands of small dealers, which they have to move, and this to some extent is depressing the market. Heavy Melting Stock is particularly weak, and has sold in small lots recently as low as $16 a ton. We quote per gross ton, f.o.b. Pittsburgh: Heavy Melting Scrap, $16 to $16.25; Cast Iron Borings, $10 to $10.25; Bundled Sheet Scrap, $14 to $14.25; No. 1 Wrought Scrap, $18 to $18.50;

Old Steel Rails, short pieces, $16 to $16.25; long pieces for rerolling, $17 to $17.50; Machinery Cast Scrap, $15.50 to $15.75; Steel Turnings, $14 to $14.25. Old Car Wheels are quite firm, and are held at $18.50 to $19. There is no market here for Old Iron Rails, but they are bringing about $20.50, delivered, in the Youngstown district.

Coke.—While prices for prompt shipment are no higher the tone of the market is possibly a shade firmer, due to the uncertainty as to the coal strike. There was a sale last week of a round tonnage of Connellsville Furnace Coke at $2.10 at oven, while some small sales were reported at $2.20 at oven. Strictly Connellsville 72-hour Foundry Coke has been offered as low as $2.50 a ton at oven for spot shipment, but leading brands are held at $2.75 at oven. The future of the Coke market as regards prices will depend largely on whether there is a coal strike. If this should come, prices of both Coal and Coke are certain to advance. The output of Coke continues very heavy, the Upper and Lower Connellsville regions having made nearly 380,000 tons last week. There are 29,837 ovens in both regions and of these only 1166 are idle.

Cleveland.

CLEVELAND, OHIO, February 13, 1906.

Iron Ore.—The approach of the time when the meetings between employers and unions are to be held for the discussion of 1906 wage scales on the lakes seems to emphasize the possibility of a tie up of the lakes at the opening of navigation from one of three sources. The one offset which presents itself at present is the growth of factions in the unions themselves. This is especially true among the tugmen and the seamen and something of the same spirit is manifest in the organization of lake masters. The situation at present shows a good deal of uncertainty. Weather conditions point to an early opening of navigation. The ice formations between the various lakes have been so much less this winter than usual that it is predicted, coming from the upper lake region, that the channels will be opened for boats by April 1. Lake shippers of ore find no occasion to move in the matter of charters beyond what they did in the latter part of last year. The period of rest in the Pig Iron situation is the cause. With buyers in that quarter holding off, it is not expected that the Ore yet unsold will be taken until after the opening of the second half of the year, when the new buying movement in iron is looked for. Prices remain unchanged, at $4.25, base, f.o.b. Lake Erie ports for Old Range Bessemer.

Pig Iron.—Pig Iron producers report only one furnace out of blast in the valleys. Cleveland furnaces are all in operation. Anticipation of contract requirements has stopped and to that extent the market appears easier. Consumers have ceased to urge furnaces to ship rapidly, but are still taking all the Iron due them on contracts, although in some cases it is being stored against possible future requirements. No new buying has appeared, and indications point to a continuation of the present dullness for several weeks. On the other hand, is the sold up condition of the furnaces for the first half. Buyers are talking lower prices, and something is heard of lessened demands upon foundries for their product in the immediate future. The market is still nominally $17.50 for No. 2 in the valleys, with that price being shaded where freight rates from competing furnaces have to be equalized. Southern producers are not quite so strong, and some sales have been reported in this territory at $14, Birmingham, for No. 2. Weather conditions and the lessened supply of Coal have strengthened the Coke situation slightly. The best grades of 72-hour Foundry Coke are selling at $3 to $3.25, at the oven, and Furnace Coke at $2.35 to $2.50.

Finished Iron and Steel.—The introduction of some new capacity into the Steel situation has brought relief in some lines and introduced conditions which make for an uneven market. This is especially true in the Structural and Plate trades. One important interest reports that in the week a big contract was closed for Structural Shapes on which deliveries could not be promised until the latter part of October. Another concern sent notice this week to one of its best customers that it did not have enough orders in on wide channels to complete a rolling and could make immediate delivery. Some of the Eastern mills selling in this territory have taken orders for lots of 200 to 500 tons of Plates of assorted sizes at premiums ranging from $2 to $4 a ton. At the same time another mill, which does not produce a full assortment of sizes, took orders with deliveries in 30 days. Since the productive capacity in Structural Steel at mills serving this territory has been or soon will be increased by 2500 tons a day, it is not considered possible that the stringency in material will be seen again for some time. In Steel Bars business is light. One large consumer gave an order in the past week for small sizes, deliveries being promised in less than three weeks. One mill was able to make almost immediate shipment. In most instances mills are able to make deliveries on Bars inside of 30 days, or 55 at the outside. The price under the circumstances is merely holding steady at the old quotation of 1.50c., Pittsburgh, for both Bessemer and Open Hearth. Bar Iron is coming to the level of Steel. Scrap prices are shaky and declining, and the market has eased materially. It is now said that mills would take an order for Bar Iron at 1.75c. to 1.80c., at the mill, prices being strictly local and not based on Youngstown as heretofore. One of the strongest spots in the market is in Sheets, where the buying has been unusually good. The mills are gradually filling up and a good deal of the tonnage is reverting to the jobbers. Prices out of stock are unchanged at 2.15c. for No. 10 Black; 2.70c. for No. 28 One Pass Cold Rolled, and 3.70c. for No. 28 Galvanized. Billets are also easier, and while the supply seems to be coming from the smaller mills, it is adequate to the needs. We quote $24 to $25, at the mill, for Bessemer, while $27 to $28, Pittsburgh, is paid on Open Hearth and Forging Billets.

Old Material.—The market is soft, due to the heavy accumulation of supplies during the open weather and inability to sell quickly. Prices have not given much, evidently because buying has not been heavy enough to force a break. The following are dealers' quotations, all f.o.b. Cleveland, gross tons: Old Steel Rails, $16.50 to $17.50; Old Iron Rails, $23 to $23.50; Iron Car Axles, $16.50 to $17.50; Heavy Melting Steel, $16 to $16.50. Net tons: Cast Borings, $8.50 to $9; No. 1 Busheling, $15; No. 1 Railroad Wrought, $17 to $18; Iron Car Axles, $22 to $23; No. 1 Cast, $15; Stove Plate, $11; Iron and Steel Turnings and Drillings, $11 to $12.

Cincinnati.

FIFTH AND MAIN STS., Feb. 14, 1906.—(*By Telegraph.*)

Pig Iron.—The buying done during the past week has been of such small moment that it is a difficult matter to state the true condition. With a large percentage of consumers covered for a month or two buying is reduced to actual needs and in most cases short delivery. The only strong feature of the situation is Bessemer, which is reported as fairly active, with Malleable, Basic, Foundry and Forge Irons very quiet indeed. Established quotations are as a rule being firmly maintained and there seems to be little disposition on the part of either furnaces or others to shade them. The market is now only passing through the natural reaction after times of great activity. This state of affairs, according to the best informed, will probably continue for a month or so and then buyers must necessarily come forward and again cover their requirements, as consumption is going on at an extraordinary pace and stocks in yards are being rapidly depleted. Local foundries are reported to be quite active, with orders several months in advance. We learn of one inquiry for 1000 tons of Gray Forge calling for Pittsburgh delivery, another from an Indiana consumer for 500 tons of Southern No. 2 Soft, one from a northern Ohio manufacturer for 200 tons of Silvery and one for 500 tons Nos. 2 and 3 Southern from a central Ohio consumer. Freight rates from Hanging Rock district to Cincinnati are $1.15 and from Birmingham $2.75. We quote f.o.b. Cincinnati:

Southern Coke, No. 1	$17.25
Southern Coke, No. 2	16.75
Southern Coke, No. 3	16.25
Southern Coke, No. 4	15.75
Southern Coke, No. 1 Soft	17.25
Southern Coke, No. 2 Soft	16.75
Southern Coke, Gray Forge	15.25
Southern Coke, Mottled	15.00
Ohio Silvery, No. 1 (8% Silicon)	21.15
Lake Superior Coke, No. 1	19.15
Lake Superior Coke, No. 2	18.65
Lake Superior Coke, No. 3	18.15
Car Wheel Irons.	
Standard Southern Car Wheel	$22.75
Lake Superior Car Wheel	21.50

Coke.—This market is somewhat stronger and firmer. There seems to have been a fairly good trade in the way of small orders during the week, with prices a shade higher. We quote the best Foundry brands from Connellsville and Virginia districts from $2.90 to $3.25, f.o.b. ovens.

Finished Iron and Steel.—The demand continues active, with considerable new work. Prices are firmly established and strong. We quote, f.o.b. Cincinnati: Iron Bars, in carload lots, 1.65c., with half extras; the same, in smaller lots, 1.90c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in small lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.83c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.83c., in carload lots.

Old Material.—We are unable to learn of any special movement that has taken place, the market being quiet. We quote dealers' price, f.o.b. Cincinnati: No. 1 Railroad Wrought Scrap, $17 to $17.50 per net ton; Cast Borings, $9 to $10 per net ton; Wrought Iron and Steel Turnings, $12 to $12.50 per net ton; No. 1 Cast Scrap, $14 to $14.50 per net ton; Iron Rails, $20 to $21 per gross ton; Steel Rails,

rolling mill lengths, $15 to $15.50 per gross ton; Relaying Rails, 56-lb. and upward, $24.50 to $25 per gross ton; Iron Axles, $22.50 to $23 per net ton; Car Wheels, $17 to $18 per gross ton; Heavy Melting Scrap, $15 to $15.50 per gross ton; Low Phosphorus Scrap, $18.50 to $19 per gross ton.

Ray S. Fox, who has been traveling for the Columbus Iron & Steel Company for the past four years, has been made sales manager of that company, with headquarters at Columbus, Ohio. He succeeds Clare Miller, who has taken a position with the Domhoff & Joyce Company, Cincinnati.

Birmingham.

BIRMINGHAM., ALA., February 12, 1906.

Pig Iron.—Probably fewer orders have been booked this week than during any week since the beginning of the year. A good many inquiries has been floating around, which were possibly intended as feelers, but as no large contracts were closed there is evidently still a considerable difference of opinion. It is said that several very conservative buyers were asking for quotations, among which was an inquiry for 15,000 tons. Selling is confined principally to off grades, and as the price made depends largely on stock which any certain furnace might have accumulated of this kind of Iron, this would not be a fair basis on which to figure market prices. While the largest producers are quoting $14.50 for No. 2 Foundry, some business has been taken by the smaller furnaces at $14 for Northern shipment, the price to Southern melters remaining at $14.50. Though production is surpassing all previous records no stocks are being accumulated, as shipments are exceeding production right along. The rush to get in Iron before the advance in freight becomes effective March 1 continues, and the railroads are doing their part by furnishing about all the transportation facilities required. The reported sale of Alabama Iron abroad at this time, in order to strengthen the market, the furnacemen say is too ridiculous to be seriously discussed.

Official figures just compiled show that the Alabama Coal production for 1905 amounted to 11,681,562 tons, as against 11,275,151 for 1904. This is rather disappointing, as a greater increase was expected. The United Mine Workers have been on a strike for more than a year and a half in all mines controlled by the furnace companies, with the exception of those operated by the Alabama Consolidated, and while these mines are all now being operated on the open shop plan with a fair production Coal is still a scare commodity in this State, and in the event of a general suspension in the Anthracite and Bituminous fields Alabama could not be depended upon to contribute any very great quantity.

Old Material.—The demand for Scrap is only medium and the general market is soft. The railroads have been large sellers, but as the Scrap was passed to consumers at a concession stocks are not accumulating. Dealers' prices are approximately as follows per gross ton, f.o.b. cars here:

Old Iron Rails	$20.50 to $21.00
No. 1 Railroad Wrought	18.00 to 18.50
No. 2 Railroad Wrought	17.00 to 17.50
No. 1 Country Wrought	16.00 to 16.50
No. 2 Country Wrought	15.00 to 15.50
Wrought Pipe and Flues	13.00 to 13.50
Mixed Steel	12.00 to 12.50
No. 1 Machinery Cast	11.00 to 11.50
Stove Plates and Light Cast	10.00 to 10.50

The Southern Steel Company announces that in addition to rebuilding its Nail mill which was destroyed by fire at Ensley last week it will also make extensive improvements in its Wire mill which will increase its capacity 50 per cent. This is only a part of its recently formulated plans to largely increase all its works in this district. New mines are being opened and Coke ovens built, and while not willing to go into details it does not deny the report that the capacity of its Steel plant at Gadsden is to be increased at least 50 per cent., which would probably require the erection of another furnace.

New York.

NEW YORK, February 14, 1906.

Pig Iron.—Very little has been done in Foundry Iron in the past week. One order from a large foundry amounted to 600 tons. Melters of Iron seem to be covered, as a rule, to the middle of the year, and there is little disposition to take up the question of supplies for the third quarter. In Basic Iron some 8000 to 10,000 tons are under negotiation. There is discussion also of the basis for further third quarter sales of Basic, several important purchases for the third quarter having been made in the latter part of 1905 by Eastern mills. Consumers of Forge Iron are not at all concerned about third quarter Iron. We note a sale of 2000 tons of off Basic in the last week. Quotations are as follows: Northern Iron, No. 1 Foundry, $18.75 to $19; No. 2 Foundry, $18 to $18.50; No. 2 Plain, $17.75 to $18.25. Southern Iron is quoted at $18.50 to $18.75 for No. 1 Foundry, and at $18 to $18.25 for No. 2 Foundry. We quote Basic at $18 to $18.25, delivered.

Steel Rails.—Orders for additional tonnages are still a feature of the Rail market, and it is believed that a number of roads will need to buy still more before their 1906 requirements are satisfied, though the original orders were considered sufficient. We note an additional sale of 5300 tons to the Boston & Maine, 12,500 tons additional to the Pennsylvania Railroad and 5000 tons additional to the Chesapeake & Ohio. The New Orleans & Great Northern has also purchased 5000 tons. Among trolley line contracts are 4000 tons for the Pittsburgh railroads, 2000 tons for the St. Joseph's Valley and 10,000 tons in small lots to various lines.

Structural Material.—The brief visitation of real winter weather in various parts of the country seems not to have caused any diminution in the amount of structural work coming up to be figured upon, and plans by intending builders are being brought forward rapidly. In central territory tributary to the important fabricating plants in the Pittsburgh district fully 100,000 tons of Steel will be required for work that is now being figured on, and specifications are being put in the hands of construction companies about a month earlier than usual. In the past week the American Bridge Company has closed contracts that will require 17,000 tons of Steel, a considerable part of it being in small lots. Among bridge work is a structure calling for 750 tons for the Monongahela Southern Railroad, and a small order placed by the Florida East Coast Line. In connection with the abolition of grade crossings on the extension of the Brooklyn Heights Railroad to Brighton Beach, 2100 tons of Steel has been let for the elevation and depression of tracks. This work was taken by Milliken Brothers of this city. The same firm has secured the contract for a part of the bridge work let in the past week by the New York, New Haven & Hartford Railroad. Seventeen bridges were awarded in all, calling for about 4000 tons of Steel. A contract a little out of the ordinary is one for 7000 tons of Steel for the Friede Globe Tower to be erected at Coney Island, awarded to a Chicago firm. The large local contracts for Structural Steel which have been under discussion for some time are still unplaced, these including the terminal building on Church street for the Hudson Company building the New York-New Jersey Tunnel. The buildings on the south side of Cortlandt street, between Broadway and Church street, which are to be replaced by the 30-story office structure to be erected by the City Investing Company, will be turned over on May 1 to wreckers. It is expected that two years will be required for the completion of the new structure. Steel piling is extending its field, and large requirements are looked for from the Panama Canal, as well as from the extensive work on the Erie Canal. We quote as follows on mill shipments of Structural Steel, tidewater deliveries: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch, 0.10c. extra; Angles over 6 inches, 0.10c. extra. Out of stock Beams and Channels are sold at 2.50c.

Bars.—Manufacturers report the Bar Iron situation quite steady. The demand keeps up fairly well. Prices for general specifications are quoted at 1.84½c. to 1.89½c., tidewater, New York, while mills making few sizes will take an attractive order at perhaps $1 per ton less. The reduction in the cost of Scrap is not affecting the price of the finished product as much as might be expected, as the Bar Iron manufacturers did not mark their priees up to correspond with the extreme cost of Scrap when it reached its maximum in November and December. Steel Bars are quoted at 1.64½c. to 1.84½c., tidewater, according to delivery desired.

Plates.—The demand is light, but manufacturers are receiving specifications on old contracts very freely so that mills are well employed and salesmen are not anxiously soliciting new business. The fact is noted, however, that deliveries may now be made by some of the mills within two or three weeks after orders are booked. Quotations are continued, as follows, at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—No large orders have been placed since last report, and as far as can be ascertained no lettings of importance are coming up in the near future, but the foundries are exceedingly busy on old contracts, and prices continue firm at $29.75 per net ton for carload lots of 6-inch, at tidewater.

Old Material.—While stocks of many classes of Scrap are accumulating in dealers' hands and on such commodities prices are lower, a few points of strength are observed in the market. Heavy Cast Scrap is particularly strong, and sales have been made within the past few days at prices as high as at any time in December. Stove Plate is in good demand likewise, and prices are quite firm. Car Wheels are possibly a shade higher than heretofore. Relaying Rails are strong. More inquiry is noted for rolling mill material than for four or five weeks, but so far only small lots are

mentioned. Railroad Wrought seems to have declined most. Heavy Melting Steel Scrap has gone off about 75c. per ton from its recent high point. This, however, is not surprising from the simple fact that railroad embargoes have been placed against the principal eastern Pennsylvania consumers for nearly six weeks. Nevertheless, quite a few inquiries have been received for Heavy Melting Steel Scrap and Old Rails for remelting during the past few days. Dealers are expecting that by March 1 a much better demand will be experienced. Approximate prices per gross ton, New York or vicinity, are as follows:

Old Iron Rails	$21.00 to $22.00
Relaying Rails	25.00 to 26.00
Old Steel Rails, rerolling lengths	16.50 to 17.00
Old Steel Rails, short pieces	15.50 to 16.00
Heavy Melting Steel Scrap	15.50 to 16.00
Standard Hammered Iron Car Axles	25.50 to 26.50
Old Steel Car Axles	20.50 to 21.50
No. 1 Railroad Wrought	19.50 to 20.50
Iron Track Scrap	17.50 to 18.50
No. 1 Yard Wrought, long	18.00 to 19.00
No. 1 Yard Wrought, short	16.00 to 17.00
Wrought Pipe	14.75 to 15.25
Light Iron	10.50 to 11.50
Cast Borings	9.25 to 9.50
Wrought Turnings	13.00 to 13.50
Old Car Wheels	18.50 to 19.50
No. 1 Machinery Cast	15.00 to 16.00
Stove Plate	12.50 to 13.50
Malleable Cast	16.50 to 17.00

Metal Market.

NEW YORK, February 14, 1906.

Pig Tin.—Business has been at a low ebb, but prices are considerably firmer than a week ago. The advance was caused by a sharp advance in the London market on Tuesday, which is believed to be more speculation by the bull leaders. The lowest point of the week was on the 8th when Tin was sold at 36.10c. On the 9th sales were made at 36.20c., while on the 13th 36.60c. was asked. To-day the market is 36.60c. The London market has advanced practically £3, and spot is now held at £167; futures at £165 10s. The arrivals so far this month aggregate 2538 tons, while there are afloat for American ports 2685 tons.

Copper.—There have been no sales reported of any large lots, and business is practically confined to shipments on old contracts or orders for meager amounts. In the absence of business to establish quotation the market may be considered nominally at 17.75c. to 18c. for Lake, 17.62½c. to 17.87½c. for Electrolytic, 17.50c. to 17.62½c. for Casting Grades. For strictly spot shipments a premium above these quotations would probably be demanded. The impression continues that a bona fide order for a round lot of Copper at some concession from these prices would undoubtedly result in business. At the present level it is not believed that European melters will enter the market as buyers unless conditions should change considerably. The London market is a trifle higher than a week ago, spot being quoted at £78; futures at £76 and best select at £84. The exports so far this month are small, aggregating 7495 tons. The settlement of the Butte Copper war relieves the mining situation in Montana, but this will probably have little effect on the present Copper market.

Lead.—The American Smelting & Refining Company to-day reduced its price $5 per ton. Shipment Lead in 50-ton lots can now be obtained at 5.35c., New York delivery. For some months this company has been taking orders only at the price current on date of shipment. This new quotation is therefore much more important than a mere reduction in price, as it marks a change of policy. For spot Lead, New York, we quote 5.40c. to 5.50c. In St. Louis the market is 5.35c. The London market is lower at £15 15s.

Spelter.—In common with other metals Spelter is very dull. For spot February and March shipment New York delivery, 6.10c. is quoted. In the West the market is unchanged at 5.95c. The London market declined sharply on Tuesday and closes to-day at £26.

Antimony.—Heavy purchases by the German Government have cleaned up the available stocks of Antimony, and prices are much firmer. Cookson's is quoted at 16c. to 17c.; Hallett's at 15c. to 15.50c.; other grades at 14.50c. to 15c.

Nickel.—Large lots are held at 40c. per lb.; small quantities at 50c. to 60c. per lb.

Quicksilver—Is practically unchanged at $41 per flask of 75 lbs. in 100-flask lots. The London market is unchanged at £7 7s. 6d.

Tin Plate.—Prices continue unchanged on a basis of $3.50 f.o.b. Pittsburgh, or $3.69 f.o.b. New York, for 100-lb. IC Coke Plates. In Swansea, Welsh Plates are 1½d. higher at 12s. 10½d.

Old Metals.—Business is of fair proportions, and dealers are selling at about the following quotations:

	Cents.
Copper, Heavy Cut and Crucible	17.25 to 17.50
Copper, Heavy and Wire	16.75 to 17.25
Copper, Light and Bottoms	15.25 to 15.75
Brass, Heavy	11.75 to 12.00
Brass, Light	10.00 to 10.25
Heavy Machinery Composition	15.25 to 15.50
Clean Brass Turnings	10.25 to 10.50
Composition Turnings	13.00 to 13.25
Lead, Heavy	5.15 to 5.25
Tea Lead	5.00 to 5.15
Zinc Scrap	4.90 to 5.10

Iron and Industrial Stocks.

NEW YORK, February 14, 1906.

The past week has been quite free from erratic movements among the iron and steel stocks. Prices have been on the whole well maintained. Extreme fluctuations in the most active stocks from last Thursday to Tuesday, inclusive, are shown in the following high and low quotations: Car & Foundry common 43¾ to 46; Locomotive common 74½ to 76; Cambria Steel 35¼ to 37¼; Colorado Fuel 70⅞ to 73⅜; Crucible Steel preferred 78⅛ to 79¾; Pressed Steel common 60½ to 62⅜; Railway Spring common 59⅜ to 60¼; Republic common 33⅝ to 35⅞, preferred 107 to 108; Sloss-Sheffield common 87½ to 89; Tennessee Coal 154½ to 160; United States Pipe common 48½ to 49½, ex-dividend; United States Steel common 43½ to 45, preferred 108¾ to 109⅝. Last transactions up to 1.30 p.m. to-day were made at the following prices: Can common 10¼, preferred 70; Car & Foundry common 45¼, preferred 102½; Locomotive common 74⅞, preferred 116½; Steel Foundries common 12¾, preferred 48⅞; Colorado Fuel 70⅝; Pressed Steel common 61½, preferred 102; Railway Spring common 59⅜; Republic common 34½, preferred 107½; Sloss-Sheffield common 88; Tennessee Coal 156½; United States Cast Iron Pipe common 48⅝, preferred 93¼; United States Steel common 43⅝, preferred 108⅞.

A special meeting of the directors of the Wheeling Steel & Iron Company was held in Wheeling, W. Va., last week at which the annual report was presented, said to be very satisfactory. They declared a stock dividend of 18 per cent. and a cash dividend of 2 per cent., which will also be paid on the stock dividend. The capital of the company is $5,000,000, all of one class, and the bonded indebtedness is $350,000, bearing 5 per cent.

Dividends.—Niles-Bement-Pond Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable February 15, and a semi-annual dividend of 3 per cent. on the common stock, 1½ per cent. payable March 20 and 1½ per cent. payable June 20.

Pratt & Whitney Company has declared the regular quarterly dividend of 1½ per cent. on the preferred stock, payable February 15.

The La Belle Iron Works Deal.—To-day, February 15, the options given some time ago to Edwin N. Ohl by stockholders of the La Belle Iron Works, Steubenville, Ohio, expire and indications are that they will not be exercised. It is understood that some points have arisen which make it impossible to put the deal through at this time, and the prospects are that the stockholders will be asked to grant an extension of their options. Whether the majority will agree to do this is somewhat doubtful, as some of the larger stockholders have expressed themselves indifferent to the sale of the plant. Nothing official about the deal has been given out by Mr. Ohl, and it is not known who the intending purchasers are. Common report has it that foreign capital is interested.

The Indiana Steel Company is the firm name of the Indiana corporation which has been organized to conform to the legal requirements of that State by E. J. Buffington, T. W. Robinson and G. J. Thorp, officials of the Illinois Steel Company, under whose direction the new plant near Toleston will be built and operated. The capitalization is merely nominal. Although no definite announcement has yet been made it has been practically decided to roll basic steel rails at this plant. This marks a new and interesting departure in the North, although the Tennessee Coal, Iron & Railroad Company has been rolling such rails in the South. Steel operations at this plant are to be limited to the basic practice entirely, and the extension in this direction is in accordance with the policy outlined by the operating department of the United States Steel Corporation not to extend its Bessemer operations beyond its present capacity. Work on the erection of this new plant will be commenced in the spring.

The Montana Copper War Ended.

After several weeks of rumors of peace in the Butte copper field the announcement was made on Tuesday that the Heinze properties immediately affecting the Amalgamated Copper Company's interests had passed into new hands and that the war was over. F. Augustus Heinze and the United Copper Company subsidiaries have sold all their important properties, and transfers were made on Tuesday to Thomas F. Cole of Duluth, president of the Oliver Iron Mining Company, as trustee. Mr. Cole will deliver the properties to a new corporation yet to be organized. While the Amalgamated Copper Company as such has had no part in the transaction the capitalists most largely interested in the Amalgamated are associated with Mr. Cole in the new deal, and the initiative in the negotiations now successfully terminated was taken by John D. Ryan, president of the Anaconda Copper Company and in charge of the Amalgamated interests at Butte as managing director. All the properties long in litigation have been taken over on behalf of the new company, purchases being made from United Copper Company subsidiaries. The United Copper Company interests which are retained consist of a concentrating plant at Basin, Mont., possibly worth $250,000; one mining claim at Butte, the Lexington, held under bond and to complete the title to which, it is understood, there remains $2,000,000 to be paid, and a number of undeveloped mining claims. The important North Butte interests, of which Mr. Cole has been the head, are represented with Amalgamated and other interests in the new corporation that is to be formed. Whether this corporation will acquire other companies and thus develop into a great holding company including the larger copper interests is entirely a matter of the future, but the termination of the Amalgamated-Heinze war is considered the first step in a general clearing up and unification.

The properties which Mr. Cole took over include the Minnie Healey, Rarus, Tramway, Corra-Rock Island, Belmont, Nipper, Johnstown, Hypocka, Guardian and the Montana Ore Purchasing Company's smelter. In addition to the producing mines a large number of properties never opened because of restraining litigation have also been purchased. The deal means the dismissal of more than 100 lawsuits involving $50,000,000 of claims. All of the properties will be operated at once and the new corporation will start with the production of the Heinze properties of nearly 40,000,000 pounds of copper a year, which can be increased within a short time. Statements as to the price paid for the Heinze properties vary from $25,000,000 to only half that sum, with deduction for the mortgage indebtedness standing against the United Copper Company properties.

Labor Notes.

The boiler makers and iron shipbuilders are organizing the United Boiler Makers and Iron Shipbuilders of America, and a large number of workers in these lines at Atlantic Coast yards have affiliated with the new union. A convention in New York this week perfected the details of organization.

A compromise with the striking housesmiths was made last week by the following New York firms: George A. Fuller Company, Terry & Tench Company, Wells Brothers, the Thompson-Starrett Company and Jobson & Hooker. The Fuller Company is the only one affiliated with the Allied Iron Associations. The settlement brings back to work 500 men at $4.80 a day. It is claimed not to be a surrender. The Fuller Company was tied up by the iron workers' strike in Chicago, and also had an emergency contract in New York, the Plaza Hotel, which was being held up by the strike. The company applied to the Allied Iron Associations Committee for leave to take the men back on this contract and the request was granted. The decision of the Allied Iron Associations to employ no housesmiths except as individuals is not affected. It is stated that several hundred members of the union are now working as individuals at $4.50 a day and that no agreements were signed by the firms which have just taken their men back. There are now working under open shop conditions about 1300 housesmiths in the employ of the Allied Iron Associations' members and this number is expected to be considerably increased this week.

An Illinois and Indiana Coal Consolidation.—The Dering Coal Company, the Indiana Consolidated Coal Company and the Brazil Block Coal Company have been merged and will be operated under the direction of the Dering Company. These three companies operate 34 coal mines in Indiana and Illinois and have an output of 30,000 tons daily. R. R. Hammond, formerly general manager of the Chicago & Eastern Illinois Railroad, president of the Dering Coal Company, will probably continue at the head, and J. K. Dering, the vice-president, will also be retained in his old position. The directorate will include B. F. Yoakum, chairman of the board of the Rock Island-'Frisco system; C. W. Hilliard of the Rock Island Railroad; Robert Mather, formerly chairman of the Rock Island board; A. F. Banks, Carl Scholz, vice-president of the Consolidated Indiana Coal Company, and Charles L. Walcott of Delaware. The Dering Coal Company, which thus becomes the largest selling interest for Illinois and Indiana coal, was formed a year ago by R. R. Hammond and J. K. Dering.

In a recent item the impression was given that the American Brake Shoe & Foundry Company, Mahwah, N. J., had placed an additional mortgage of $1,000,000 on its properties. Such is not the case. In September, 1904, the company filed a supplemental mortgage in order to include in its first and only mortgage of $1,000,000 all properties that had been acquired subsequent to that mortgage in 1902. The company thereby further secured its present bondholders by the addition of these properties. The only mortgage on the company's properties is the first one as stated, which now stands at $924,000, a reduction taking place each year by its sinking fund provisions.

The United States Circuit Court of Appeals for the Southern District of Ohio, Western Division, handed down a decision February 6 in the suit brought against the American Hoist & Derrick Company by the Cincinnati Railway Supply Company for infringement of a patent issued to Oliver Crosby for a wire rope clamp, which is a device for holding together two wire ropes. The court below had found that the patent was valid and that it was infringed and ordered an accounting of profits and damages, but the Court of Appeals decides that there was no infringement, reverses the judgment of the lower court and directs the dismissal of the action.

The United States Steel Corporation has just closed its purchase of land in Lake County, Indiana, where the new plant of the Illinois Steel Company is to be built. The property embraces a total of 2,368 acres, for which $1,432,800 was paid. Eight hundred acres were purchased from H. H. Holt, New York, for $360,000; from Veeder & Valentine, 880 acres, known as the packers' tract, on which the Chicago packing houses had intended erecting a stock yard some years ago, for $660,000; 688 acres from the Chicago Junction Railway, for $112,800.

President James of the University of Illinois announces the establishment at Urbana, Ill., of a comprehensive school of railroad engineering and administration—the first of the kind in the world. It will be open for work in September of this year and is intended to cover the entire field of the railroad service, so that any one who wishes to enter upon railroad employment in any branch of railroad engineering or management will find an opportunity to prepare himself especially for that work. Aside from the special faculty organized to give instruction in these various departments, prominent railroad officials from the various branches of the railroad service will be engaged for special lectures and special courses, in order to emphasize the increasing value of the practical features of the curriculum.

The Machinery Trade.

NEW YORK, February 14, 1906.

With the week shortened by a holiday and many of the heads of important machinery houses off to the National Supply and Machinery Dealers' convention at Old Point, very little aside from the general run of business has developed. This latter continues with apparently no let up, and as spring approaches the maturing of some of the large projects becomes nearer. There are now on the tapis some very large propositions which are sure to go through within the next few months and from which the trade will derive material benefit in the way of machinery orders.

The past week has been a busy one with a number of factories with which orders have been placed for export to Germany, and machinery houses that handle export trade to that country have been rushed for some time past and particularly of late. The next few days will be about the last opportunity that dealers will have to ship goods to Germany to arrive before the additional tariff on various machinery products will be enforced. The tariff goes into effect on March 1, and it will affect nearly every branch of the trade, as well as machinery supplies and parts of machinery. It was said in the trade that there will be many disappointments on the other side, as it was practically impossible for many houses to fill all the orders they received; consequently it is thought that many orders that have been placed will be canceled through the failure of American manufacturers to get delivery started in time to reach Germany before March 1. That the tariff will have a decided effect on the trade is shown by the fact that exports to Germany have increased materially of late as a result of the rush on the part of German customers to get deliveries and stock up on various lines before the higher rates went into effect. This is especially true with machine tools, and in this line many manufacturers were by no means able to fill all the orders that came to them.

The Air Brake Association of America will hold its annual convention on June 5, 6 and 7 at Montreal. This will be the first time the organization has met in Canada. The Air Brake Association of America is composed of mechanical men connected with the manufacture and use of air brakes, as well as supplies, and at the meetings subjects of mutual interest are discussed. Frederick Nellis, who is connected with the Westinghouse Air Brake Company, is secretary of the organization.

Important Machinery Requirements.

From time to time we have referred to the large business being done by the Chicago Pneumatic Tool Company, New York, particularly in its air compressor and rock drill departments, and of the necessity for the company's greatly increasing its capacity in order to take care of its orders within anything like a reasonable time. The company has recently opened its Philadelphia plant, which has not been operated since the consolidation was formed, and is preparing to enlarge its other plants. The largest extensions will be made at Franklin, Pa., which is the main plant producing air compressors. Plans are now being prepared for the new buildings to be erected at that point and preliminary specifications are being prepared for a good sized list of machine tools to be installed in the new buildings. While work of construction of the buildings cannot be commenced until the frost is out of the ground, the company, quite aware of the extended deliveries of machinery, will purchase the necessary tools some time before building operations commence, so that the tools can be delivered as soon as the new structures are ready. It is expected that the preliminary list now being prepared will be presented to the machinery trade within a very short time, but there will be considerable additional machinery to that on the list bought. The list of tools is being made up at the Franklin plant. The company has recently secured some large orders for compressors, including two large air compressors from the Southern Railroad and one from the American Ship Building Company. The air compressor and rock drill departments are under the management of W. P. Pressinger.

The extensive improvements to shops to be made by the Pennsylvania Railroad are gradually coming to view, and as they leak out, unofficially, it is apparent that the company will purchase very large quantities of machinery this year. We understand from an outside, although reliable, source that the Pennsylvania Railroad intends to spend about $300,000 for improvements to its large shops at Altoona, Pa. For carrying out its scheme to electrify part of its system the railroad interests have purchased two-thirds interest of the Public Service Corporation which has a large power plant and electric lines in New Jersey. This acquisition will materially assist the Pennsylvania Railroad in the quick application of electricity to that part of its road adjacent to New York and will give it control over electric lines covering quite a wide territory.

The Central Railroad of New Jersey has purchased a large tract of land at East Allentown, Pa., where, it is understood, the company intends to erect large locomotive and car shops. The company has chosen this site to merge a number of its shops, it is said, because Allentown is a junction point which is an equal distance from New York and Scranton on the company's line. The Reading Railroad, which is closely allied to the Central, will have the use of the shops, and a large railway yard will be built there. The yards will take care of traffic which has formerly been handled in the small yards at Harrisburg, Allentown, Reading and Cherry Run.

The St. Louis Southwestern Railroad will probably make important improvements at Pine Bluff, Ark., the plans for which have not yet been prepared. It is reported that $60,000 is to be expended on the improvements.

About $100,000 is to be expended by the Kemmerer Iron & Steel Mills, Scranton, Pa., for new machinery to equip the plant it intends to install for the rolling of iron and steel. The company, which was recently organized with a capital stock of $150,000, has purchased the old south mill property of the Lackawanna Steel & Iron Company, upon which there are four good sized buildings. The mill will be entirely new and will be equipped with the best and latest machinery including two Corliss engines, 350 horse-power each; one engine, 100 horse-power; two engines, 20 horse-power each; three double puddling furnaces, two heating furnaces, one 16-inch Belgian mill, one 12-inch mill with complete complement of rolls, one 18-inch roughing mill, one squeezer, two alligator shears for 2-inch square or less, one alligator shears for 2½-inch square or less, one alligator shears for 5-inch round or less, three Hyde upright boilers, 250 horse-power each; hot beds, scales, tracks and general outfit for such a mill. The product will be taken by Bittenbender & Co.

In view of the fact that the trade is closely following the improvements to be made by the Southern Steel Company, Birmingham, Ala., at its different plants, it will be interesting to note that the machinery destroyed in the fire at its nail mill included the nail machines, pulleys, hangers, shafting, belting, vises, rumblers and a 500 horse-power cross compound engine. The company is to rebuild at once, and it is likely that very shortly work will be started on other extensive operations which have been mentioned in these columns.

Considerable machinery is required by the Landis Tool Company, Waynesboro, Pa., which intends to build further additions to its plant for the manufacture of cylindrical grinding machines. At a recent meeting of the board of directors it was decided to build an extension, 68 x 80 feet two stories high, to its large machine shop, and the purchase of a good sized amount of new machinery for the shops was authorized. No specifications have been prepared and it is not definitely decided just what machinery will be purchased. In the last year or so the plant has been materially extended and an addition to the machine shop is now being completed.

Some machinery will probably be required by the Bellefontaine Bridge & Iron Works, Bellefontaine, Ohio, as it intends to rebuild the part of its plant which was recently destroyed by fire. The company does not know at the present time just what it will require in the way of new machinery.

The American Standard Mfg. Company, 141 Broadway, New York, will build a factory at Somerville, N. J., next spring, for which property has been acquired. The factory will be of brick and will consist of two parallel buildings each 50 feet wide by 200 feet long, joined in the center by a third building, 50 x 75 feet. There will be an office building and a boiler and engine house, which will be disconnected from the main structure. The company will have its main offices in New York and will begin to do business as soon as the factory is erected. The property on which the plant is to be located was given to the company by the Board of Trade of Somerville, and it is on the line of the Central Railroad, from which a spur track will be constructed to the factory property. The company was organized a short time ago with M. D. Converse as president, who was formerly superintendent of the Tower & Lyon Mfg. Company at Bloomfield, N. J. L. H. Swind is vice-president of the corporation and Charles A. Wessel secretary and treasurer. The company will manufacture general hardware and is capitalized at $750,000. Subscriptions for stock are now being received, and one of the company's plans is to offer stock to hardware dealers, and all subscribers in that business who are holders of 20 shares or more will be entitled to receive a rebate of from 5 to 10 per cent. on all purchases of goods bearing the company's brand. Sufficient stock has been subscribed by interested parties in Somerville to build the factory, but operations will not be begun until the entire sum has been subscribed, which, it is expected, will occur before spring. All subscriptions that are made by hardware men will be deposited in one or two banks in New York, and that money will not be touched, it is stated, until the entire sum has been collected and the company is ready for business. Those in charge of the scheme are sanguine of its success, and they state that the company will be in the market for its machinery equipment by nexe summer, if not before.

The entire power plant and practically all the cars of the Poughkeepsie City & Wappinger's Falls Electric Rail-

way, Poughkeepsie, N. Y., were destroyed by fire February 11. It is understood that steps are to be taken immediately to install a new plant and purchase new cars.

The Board of Water Supply, Gas and Electricity, New York, has let the first contract looking toward the establishment of the $161,000,000 water supply for New York. The contract is for boring under the Hudson River, about six miles south of Poughkeepsie, and was obtained by the American Diamond Rock Drill Company, New York.

Chicago Machinery Market.

CHICAGO, ILL., February 13, 1906.

Several inquiries for complete shop equipments are now being figured on by Western machinery dealers and manufacturers and several railroad inquiries, although for limited requirements, have also recently come out. The Illinois Steel Company will erect a new machine shop at its South Works and will require a large number of miscellaneous tools, while contracts for machinery for the new plant near Toleston, Ind., are being awarded daily. The Griffin Wheel Company is now receiving bids for the foundry machinery to be installed in its new cast iron car wheel plant at Kensington, and bids for the power plant equipment of the County Building closed on February 5 and are now being considered by the Board of Commissioners. Dealers on Machinery Row report a continued heavy demand for second hand machinery, this being accentuated on account of the inability of the machine tool builders to make early deliveries.

The Griffin Wheel Company, Chicago, has purchased a site at Kensington, Ill., on which will be erected a plant with a capacity of 500 wheels daily. The plant will comprise a main building, power house and various sheds and other small structures. The main building will house the following departments: Core house, 202 x 264 feet; cleaning house, 60 x 132 feet; charging house, 50 x 90 feet; pattern shop, 24 x 32 feet; machine shop, 50 x 56 feet; storage house and office, 28 x 110 feet; carpenter shop, 28 x 32 feet. The power house will be 54 x 96 feet. In addition to the above there will be a scrap iron shed, 42 x 325 feet; coke shed, 42 x 325 feet; coal shed, molding sand shed, wood shed and core shed. The plant will be electrically operated and contract has already been let to the Westinghouse Company for a turbine unit. Other equipment, which will include electrical machinery in addition to a pair of boilers, has not been purchased. General contract for the erection of the buildings has been let to R. & S. Sollitt Company, Chicago. D. A. Swan is manager of the review and improvement department of the company and is receiving the bids for the different work. The Griffin Wheel Company already has in operation two plants in Chicago; one, the main plant, at Sacramento Square, has a capacity of 1500 wheels daily, and the other, in the neighborhood of the stock yards, has a daily capacity of 500 wheels. It also has plants in other States, as follows: Detroit, Mich., annual capacity, 90,000; St. Paul, Minn., annual capacity, 100,000; Kansas City, Kan., annual capacity, 100,000; Denver, Colo., annual capacity, 90,000; South Tacoma, Wash., annual capacity, 60,000 wheels.

The Independent Pneumatic Tool Company, Chicago, owing to inadequate capacity of its present plant at Aurora, Il., has leased a large building adjoining and will purchase $50,000 worth of new machinery at once for installation therein. A large addition will also shortly be added to the plant. The company reports business, both foreign and domestic, as developing with pronounced rapidity, and the plant at Aurora is now running night and day shifts. A cable order was received last week from a customer in London, England, for 300 Thor piston air drills, reversible flue rolling, reaming, tapping and wood boring machines, and pneumatic hammers.

The largest contract for blowing engines ever closed has just been placed with the Allis-Chalmers Company, Milwaukee, by the United States Steel Corporation. It provides for the delivery of 14 engines to the various blast furnace plants of the subsidiary companies of the corporation, and, while no definite instructions have yet been issued as to the points of their shipment and installation, it is known that a number will be consigned to the new plant of the Illinois Steel Company near Toleston, Ind.; several to the South Works at South Chicago and the remainder will go to furnaces in the Pittsburgh district.

The Chicago Hardware Foundry Company, North Chicago, Ill., is about to erect an additional foundry building, 60 x 100 feet, with 24 x 30 foot cupola annex, of brick and steel. The company will require two more cupolas, one jib crane, electric motors, &c.

Wilber H. Traver, formerly connected with the Rand Drill Company for a period of 12 years as manager of the Chicago territory until the consolidation of the Ingersoll-Rand companies, after which time he was manager of the railroad department with headquarters in Chicago, has severed his connection with the Ingersoll-Rand Company and accepted services with the Chicago Pneumatic Tool Company as manager of the mining and contract department. Mr. Traver will devote his time and attention principally to the sale of air compressors, rock drills and mining machinery.

The Novelty Iron Works, Dubuque, Iowa, reports a very material increase in the volume of business for January, 1906, as compared with the corresponding month last year. Heavy orders are noted, especially for the improved Boss trip hammer, the Triumph shingle sawing machines and Victor punches and shears. The firm is about to bring out a new type of helve hammer to meet the demands of blacksmiths who cannot afford to place the higher priced machines in their shops. The firm will continue to manufacture the improved Boss hammer, the new type only being intended to supply the demand for a cheap machine among the smaller shops.

The Oliver Machinery Company, Grand Rapids, Mich., is erecting a new plant, which will consist of main factory building, 120 x 300 feet; brick power house and a large storage shed. Electrical power will be used, the B. F. Sturtevant Company, Hyde Park, Mass., having been awarded the contract for the entire equipment. Such other machinery as will be needed in addition to the equipment of the old plant has already been purchased. The company has heretofore occupied a leased building.

Chas. H. Besly & Co., Chicago, made shipments last week of grinders to Athens, Greece; Milan, Italy; Cologne and Berlin, Germany, and Vienna, Austria. Shipments of grinders were made in the United States to Michigan, Ohio, Pennsylvania, New York, Massachusetts, Connecticut and Illinois. The new addition which this company is building at Beloit, Wis., is nearing completion and will afford considerable increase to output.

The Kewanee Light & Power Company, Kewanee, Ill., will expend about $50,000 in new buildings and equipment. Contract has already been let for a 30-ton ice plant to be run in connection with the electric plant.

The Indiana Electric Transmission Company, Lafayette, Ind., has filed articles of incorporation, with a capital stock of $250,000. The object of the corporation is to construct and operate an electric plant to furnish heat, light and power to the people of the towns of Jasonville, Coalmont and Hymera. Machinery specifications have not yet been made up. Those interested in the enterprise are Thomas Duncan, Howard L. Hyatt and W. H. Hornberger.

The Lacombe Electric Company, Denver, Colo., whose plant was partially burned recently, is considering the installation of new turbine engines. Orders for two dynamos are now being filled by the Western Electric Company, Chicago.

The contracts for machine tools and equipment previously referred to in these columns placed by the Allis-Chalmers Company, Milwaukee, for installation in its new West Allis plant constitute one of the largest ever placed, involving an expenditure of approximately $550,000. Forty-two machine tools of extra heavy pattern, designed epecially for use with high speed steels, and driven by Allis-Chalmers motors, were ordered from Niles-Bement-Pond Company, Wm. Sellers & Co., Inc., Detrick & Harvey Machine Company, Manning, Maxwell & Moore, &c. The combined weight of these machines, without motors, is about 4,282,000 pounds, or 2141 tons. Seventy-five Allis-Chalmers motors of various sizes and aggregating a total of 1200 horse-power will be employed to drive these machines. Fourteen of the new tools are vertical boring and turning mills from 3 to 16 feet and of extra heavy design. There are five standard shaft lathes and two crank shaft lathes with a swing of from 60 to 125 inches and 30 feet between centers; eight planers of various sizes, all of which are the spiral geared type; a 260-ton armature press, also several drilling and boring machines, slotters, &c. In addition to the order for machine tools, 34 electric traveling cranes were ordered at the same time, of Pawling & Harnischfeger manufacture, for sizes and capacities ranging from 2½-ton wall jib cranes up to 60-ton, 78-foot span cranes with 10-ton auxiliary hoists for the new foundry. The combined weights of the cranes ordered are approximately 940 tons.

Philadelphia Machinery Market.

PHILADELPHIA, PA., February 13, 1906.

A falling off in the demand for the general line of machine tools is to be noted in the local market during the past week. Such business as was transacted was for tools in small quantities only and covered a fair range, mostly for the medium sizes. Manufacturers as a rule have as much business on their books as they can conveniently handle, and in many cases are unable to accept new orders except for extended deliveries. A temporary lull will enable them to catch up to some extent, and in some instances would not be altogether unwelcome, as in some particular lines of heavy machinery manufacturers find that it is impossible for them to promise any definite dates of delivery. Machinery merchants complain greatly of this condition of affairs, inasmuch, they say, as they are unable to make sales of tools without giving their customer some idea as to the time that delivery might be expected. Without a doubt this condition has affected sales

to a certain extent, but it has also led to the purchase of other tools, both new and second hand, for temporary use until a time when such tools as may be desired can be had.

Inquiries continue to be received in fairly good volume, but are mainly for small lots, the majority being for single tools. A few small lots have been asked for by the various railroads, who generally want prompt shipments. It is expected that some good lists will be out before long from both Southern and nearby railroads.

Some little anxiety is being felt by manufacturers in view of a possible coal strike, and precautions are being taken by some to have a good stock of raw materials on hand.

The condition of the export trade remains unchanged, and but little new business in the machine tool line has been done. Those transacting a more or less regular trade abroad in machinery specialties report a fairly even volume of business.

The demand for engines and boilers of the medium powers has improved, but for those of the small capacities the market continues weak. There appears to be considerable competition in the sale of engines of the higher powers, and prices for engines of this class are said to be more or less unsteady.

Secondhand machine tools have been in better demand and dealers have made some good sales during the past week. Owing to the inability to get deliveries on tools required, purchasers have frequently found it necessary to buy secondhand tools, if only to serve their requirements for the time.

Business continues to be offered the foundries in good volume and both the gray iron and steel casting plants have as much work as they can handle. The demand for steel castings is particularly good, and prompt deliveries on present orders are hard to get. Gray iron foundries continue to improve their conditions, notwithstanding that some of the core makers and molders are still on strike. Some plants are operating at their full capacity, while others are producing from 75 to 85 per cent. of their tonnage. Deliveries on machinery castings have improved and some foundries are now making fairly prompt deliveries on this class of castings.

Pugh & Hubberd, Engineers, 1335 Real Estate Trust Building, are working on plans and specifications for a power house for the Wooster & Mansfield Interurban Electric Railway of Ohio. The power house will probably be erected at Loudonville, Ohio. Bids for the electrical equipment are being received by the above engineers, and it is expected that they will be ready to receive bids for boilers, pumps, heaters, condensers, etc., at an early date.

The Fairmount Foundry Company was recently incorporated with a capital stock of $25,000, to engage in the general iron foundry business, paying particular attention to light gray iron jobbing work. This company has taken the foundry of the late Fairmount Machine Works, 2106 Wood street, which has a capacity of ten tons of castings per day, which will be increased as occasion demands. G. B. Benkert is president, Frederick Cook vice-president, and D. H. Redmond secretary and treasurer.

All bids for the work on the 30-foot channel of the Delaware River, under the joint appropriation of $750,000 from the State of Pennsylvania and City of Philadelphia, have been set aside by Director Acker of the Department of Public Works, City of Philadelphia. New proposals will be asked for this work at an early date.

H. T. Paiste & Co., manufacturers of electrical supplies, will erect a new four-story factory building 50 x 120 feet at the northwest corner of Thirty-second and Arch streets, on the completion of which they will move from their present nearby location. Additional requirements for power and machinery, if necessary, have not been decided upon at this time.

The Hub Machine Works, Incorporated, is now entirely settled in its new quarters at 621-623 Cherry street, where it will have over 8,000 square feet of floor space for the manufacture of Acme saw tables, Acme testing sets and Acme tapping machines, as well as a general line of special machines, and for the display of machinery and tools. This company also makes a specialty of engine room repairs and keeps particularly busy on this, as well as in its other lines. Business generally is considered in a very satisfactory shape and orders for several large contracts for shop equipment have recently been taken.

The Hoist Mfg. & Construction Company will shortly place on the market a new type of chain block hoist. This company, which manufactures a line of traveling cranes as well as general special machine tools, reports a good condition of business. General inquiries are favorable and indicate a good condition of trade in the future. Among recent deliveries was a 10-ton hand-power traveling engine room crane for the New Departure Mfg. Company, Bristol, Conn.

Frank Toomey reports a very good demand for secondhand engines, boilers and machine tools. Orders recently have been of good size, and present inquiries indicate a continuation of present active conditions. The plant of Frank Moyer, Morristown, Pa., is being equipped by him with a 125 horse-power boiler, 100 horse-power engine, pumps, heaters, etc., while that of the Duncannon Iron Company is being supplied with several 150 horse-power tubular boilers for utilizing waste heat from the furnaces. A 600 horse-power Corliss engine is to be furnished the Milton Mfg. Company, Milton, Pa., while smaller engines have been supplied the McAvoy Vitrified Brick Works, Perkiomen Junction, Pa., the Atlantic Refining Company, Philadelphia, and others.

On March 1 Dodge & Day, modernizing engineers, will remove to their new offices, in the Drexel Building, Fifth and Chestnut streets, Philadelphia, in order to be nearer to the financial center as well as to obtain more commodious quarters. This step is the natural result of the rapid growth of their business.

The Westinghouse Machine Company has opened a Philadelphia sales office in Room 1003 North American Building. The establishment of this office was necessitated by the rapidly expanding business in this territory, particularly in gas engines and Westinghouse-Parsons steam turbines and is in line with the progressive policy of the company to establish headquarters in all large industrial cities.

New England Machinery Market.

WORCESTER, MASS., February 13, 1906.

Secretary Montanus of the National Machine Tool Builders' Association has ascertained that it will be impossible to procure hotel accommodations at Atlantic City for the members for either April 9 or 16, one of which dates had been wanted for the semiannual meeting. It will be Easter time, when the season will be at its hight. The present plan, as suggested by President E. M. Woodward, is to try for the week of April 2. While little business of importance is now anticipated for the April meeting, yet matters may arise in the meantime, and it is likely that certain of the sections will accomplish important results. The builders of radial drills have not yet reached a basis of price on universal tables and fixtures for electric drives. Neither have the builders of upright drills reached an agreement on combination tables and electric drive fixtures. Other lines of machine tools represented in the association have profited materially by getting together on special fixtures, in which they had been far apart on prices, so much so, in fact, that some of the manufacturers were actually losing money on them, it is said. It is probable that the radial and upright drill sections will consider these questions at Atlantic City.

Business continues excellent in New England. The machine tool dealers of Boston report that the past week has seen some falling off in orders, but inquiries are still numerous. Inability to promise early delivery is naturally affecting the volume of business, which would greatly exceed any previous record were machines available as required by customers.

The New England Boiler Company has been organized to manufacture hot water boilers at New London, Conn. The personnel of the interested parties is not disclosed, but plans are being made for the plant which will be located on the Thames River, a short distance above the plant of the Thames Towboat Company. Ransom & Hoadley, 601 Butler Exchange, Providence, R. I., are the engineers in charge. They will buy the complete equipment. The building will be 64 x 200 feet, of which the foundry, occupying 100 feet of the length, will be two stories, and the remainder, the machine shop, one story. Two 220-volt direct current direct connected 50 kw. sets will be required, together with the necessary power boiler, which will be of the Scotch type. Electric power will be used throughout the works, under the unit system. A 2-ton traveling electric crane will be required for the foundry, and in addition there will be an electric hoist traveling on an I-beam through both foundry and machine shop. A number of machine tools will be purchased, including a radial drill, a drill of the Barnes type, two engine lathes of large capacity, a shaper and a special milling machine. Woodworking machinery will be needed for the pattern shop. No contracts have been let; in fact, no decision has been made on any of the equipment, including that for the foundry.

The Corbin Screw Corporation, New Britain, Conn., is preparing plans for a large factory building for the New Britain works. While details of dimensions are not yet ready for announcement, the building will probably be a seven-story structure of large ground dimensions. It will provide ample space for the consolidation of the work now carried on in both the present factory buildings. It will be of brick, of heavy mill construction.

The New York, New Haven & Hartford Railroad has filed plans, giving details of the tunnel which it is planned to put through the fashionable tenanted East Side hill, at Providence, R. I., to shorten the route from Providence to Boston, which means shortening the distance and time between New York and Boston. The plans call for a steel aqueduct and an embankment, 1200 feet long altogether, from the passenger station to the tunnel opening. The tunnel proper will be 4900 feet long. It will have a width of 29 feet, and its hight will be about 23 feet. It is believed that nothing but solid rock will be encountered for its entire distance. The tracks will be from 45 to 100 feet beneath the ground, excepting close to the tunnel openings, the ascent of the hill being very steep. At the easterly entrance

of the tunnel a long fill will be necessary, and a drawbride will have to be constructed across the Seekonk River. The estimated cost of the work is $2,000,000. It is planned to use electric locomotives exclusively for hauling trains through the tunnel.

The Scovill Mfg. Company, Waterbury, Conn., manufacturer of brass goods, proposes to make extensive improvements to its works at Waterbury, it is officially stated to *The Iron Age*. This is the purpose of the increase in capital stock by $812,500, bringing the total to $4,062,500, as recommended by the Board of Directors to the stockholders, which, undoubtedly, is equivalent to a final decision. The proposed increase in capital was mentioned in these columns last week.

The Fitchburg Machine Works, Fitchburg, Mass., has met with a ready demand for its new low swing lathe, a machine of radical departure in that it specializes on lathe work of small diameter, requiring a swing of not more than 3½ inches. The works are rushed with orders for this tool, and there is also a demand for lathes of large capacity, which constituted a part of the product of these shops before they came under the control of the present management. These larger types have been considerably improved of late. The company has made full arrangements for handling its tools abroad, its agents being as follows: P. & W. Maclellan, Glasgow; Henry Kelley & Co., Manchester; Alfred H. Schütte, Brussels and Liége, Belgium, Paris, Bilbao and Barcelona; M. Koyemann, Düsseldorf, Germany, Holland and Switzerland; Schuchardt & Schütte, Vienna, and Adler & Eisenschitz, Milan.

The Automatic Machine Company, Bridgeport, Conn., manufacturer of machine tools, special machinery and combustion engines, is to add a third story to its main building, which is 50 x 66 feet, the new space to be devoted to a pattern shop and storage. The present pattern shop will be used for the lathe department. This addition will afford only temporary relief, and the company plans to build in the spring, doubling the present building.

The Washburn shops of the Worcester Polytechnic Institute, Worcester, Mass., have received an order for 24 sensitive drills from Charles Churchill & Co., London.

Charles Tiberghien & Bro., Tourcoing, France, will erect a very large textile manufacturing plant at Woonsocket, R. I., the city government of that city having made substantial concessions in the way of exemption from taxation. As the plant will be entirely new it is presumed that machine tool equipment for a repair shop, as well as power equipment, will be required.

Blake & Johnson, Incorporated, Waterbury, Conn., manufacturers of presses, rolling mill and other machinery, and of rivets, screws and specialties, have reorganized to fill the vacancies in the Board of Officers caused by the death of R. R. Stannard, the president and treasurer. John P. Elton has been elected president and Robert P. Lewis secretary and treasurer. Mr. Elton is treasurer of the American Brass Company and the Waterbury Brass Company and is an officer in other important manufacturing industries. Mr. Lewis has been secretary of Blake & Johnson, Incorporated, for some years, and the addition of the office of treasurer merely extends his responsibilities.

J. F. Sturdy's Sons, North Attleboro, Mass., have decided to install an electric plant to operate the machinery in their three buildings. Generators and motors will be required. The matter of power is not settled. The firm states that it is now considering installing an oil engine.

The city of Burlington, Vt., has appropriated $25,000 for the incr ase of its municipal electric lighting system, and more money will be provided as the work progresses, the plan being to install new electric generating equipment to double the capacity of the plant.

The Consolidated Lighting Company, Montpelier, Vt., is to install equipment to greatly increase its facilities for producing electric power. A new power plant will be erected and a 2200 horse-power turbine water wheel will be installed, which will drive a 1200 kw. generator.

Catalogues Wanted.—The Boston Gear Works, 152 Purchase street, Boston, Mass., has about completed its new shop and would be pleased to receive catalogues of mechanical goods.

Cleveland Machinery Market.

CLEVELAND, OHIO, February 13, 1906.

Business in all lines of the machinery trade, both among the manufacturers and dealers, continues to improve. A number of concerns in various lines report that January just past was the heaviest month in the history of their business. However, with shops crowded to their limit and business a matter of deliveries rather than securing contracts, comparatively few of the manufacturers in this district seem to be making large extensions of plants or ordering large equipments of tools. As has been the talk for many months orders for tools in this district are numerous but scattered with few bulky orders being placed. The makers of hoisting and conveying machinery seem to be experiencing a boom and some very large contracts for ore and fuel loading and unloading machinery are being placed. The vessel business, of which this city is the center for the Great Lakes, has taken another start. With berths all filled for this year, vessel operators have commenced contracting for ore carriers for 1907 delivery. With the season of sales hardly started, the manufacturers of automobiles are commencing to order additional machinery with which to start on parts for 1907 machines; the manufacturing season on these goods is now two to three months earlier than it was a year or so ago, and there appears to be no limit to the number of automobiles which the country is absorbing.

The announcement that the American Shipbuilding Company has just closed contracts for four large steel vessels for 1907 delivery created something of a sensation among vessel and ore interests. One contract for three 605 foot boats is the largest ever placed on the Great Lakes, amounting to about $1,500,000. They are for the Western Transit Company, Buffalo, and will be 5 feet longer and 3 feet wider than any vessels now on the Lakes or under contract. They will have a capacity of 13,000 gross tons each and will be of arch construction, will have triple expansion engines, Scotch boilers and Ellis & Eaves forced draft. The other vessel mentioned will be 440 feet long, 52 feet wide and will cost about $300,000. She will be built for Wisconsin parties.

The Pennsylvania & Lake Erie Dock Company, a part of the United States Steel Corporation, will make important improvements to its ore handling facilities at Fairport Harbor, which port is to be improved to accommodate the largest ore carriers. Contracts have been placed with the Brown Hoisting Machinery Company, Cleveland, for six legs of unloading plants of a type similar to those in operation at Conneaut Harbor, which are said to be the fastest in the country. In addition the Brown Hoisting Machinery Company has recently closed contracts for a large furnace hoist for Virginia, a pig breaker outfit for a Chicago concern and a car tipple outfit for Marble Harbor, Spain. The company has more work on hand than ever before.

The Garrett-Cromwell Engineering Company, engineer for the plant of the New York State Steel Company, Buffalo, has recently placed contracts with the Forest City Steel & Iron Company, Cleveland, for structural material for the blooming mill and soaking pits for this plant, the contract aggregating about $50,000.

Ritchie & Ruple, mechanical engineers, Cleveland, are preparing plans for a 625 foot dry dock and pump house to be erected at Toledo by the Toledo Shipbuilding Company, which recently succeeded the Craig Shipbuildng Company, Toledo. It is understood that the company is preparing to make other improvements, including a power house and a pattern shop. It is also stated that next year the company will make still more extensive improvements, including the erection of a new machine shop, boiler shop and blacksmith shop. The company has been making inquiries for some tools, but no great quantity will be bought in the near future.

The Lake Shore Electric Railway Company, Cleveland, is about to close contracts for 1000 horse-power of boilers, condensers, pumps, stokers and other equipment for its power station at Avon, Ohio.

The Lima Locomotive & Machine Company, Lima, Ohio. has purchased a tract of land, adjoining its present plant, and will erect a large addition. It expects to increase its force from 700 to 850 men as soon as the addition can be built. The company has been making inquiries in the Cleveland market for considerable new machinery.

Max Bernstein of Lima, Ohio, is one of the chief promotors of a project to build a rolling mill in that city. It is stated that $200,000 of the $300,000 required for erecting the plant and for working capital has been subscribed by local people and that the success of the project seems assured. It is planned to erect a rolling mill of about 45,000 tons capacity per year.

The Canton Boiler & Engineering Company, Canton, Ohio, has been formed by Percy A. Housely, Lee A. Housely, Elmer E. Miller, Allison D. Housely, and John S. Kiddey. The company has succeeded the Kiddey Boiler & Engineering Company and the Canton Boiler Company, and it will spend about $20,000 in improving the plant of the latter company. It will manufacture boilers, feed water heaters, steel stacks and storage tanks.

The Board of Public Works of Cleveland will receive bids until February 21 on a lighting plant for the city hall, consisting of one 100 horse-power, and one 125 horse-power automatic engine, the former direct connected to a 50-kw. generator and the latter to a 75-kw. generator, both 230-volt alternating current machines, together with a number of arc and incandescent lamps; also for 200 series alternating arc lamps, 6.6 amperes, 72 volts, for the South Brooklyn municipal light plant which has just been acquired by the city. The indications are that the city will soon enlarge this plant to illuminate the entire city. The city is also advertising for four gasoline automobiles for inspection work.

The White Sewing Machine Company is placing contracts

for the erection of its large automobile factory which has been talked of for some time. Three buildings will be erected at the start. Contracts for the structural work have been placed with the VanDorn Iron Works Company, Cleveland, and with George Smith, Benedict Building, for the engineering work.

A. L. Garford, president of the Garford Company, Cleveland and Elyria, large manufacturer of automobiles and auto parts, announces that the two plants are to be consolidated either at Elyria or Cleveland—probably in Cleveland as it is difficult to secure labor in the smaller it. The company is developing the commercial vehicle field and this alone will necessitate a large increase in facilities another season.

P. S. Balkwill, Cleveland, who owns a number of buildings occupied by manufacturing establishments, has placed a contract with Samuel Vokes for a machine shop, 25 x 113 feet, to be erected adjoining the building at present occupied by Foot, Burt & Co., manufacturers of multiple spindle drills, bolt and nut machinery. As stated in a recent issue, this company has recently acquired the plant and business of the Reliance Machine & Tool Company and it will occupy the building mentioned for additional machine shop space.

The Cleveland & Southwestern Traction Company, Cleveland, will make extensive improvements at its Elyria power station, including the installation of 750 horse-power of boilers, additional pumps and condensers and additional transformers for its high tension circuits. At Norwalk it will install two large motor generator sets to illuminate the town. Plans are being prepared for a complete new machine shop to be erected adjoining the present shop at Kamms Station. All repair work of the system will be concentrated here.

The Lewis Corrugated Culvert Company, Elyria, Ohio, has been formed by F. O. Putney, George H. Lewis, Louis Schnuerer and others. The company will make drainage culverts from sheet steel. They will be in the form of a cylinder or corrugated iron riveted together and are claimed to be cheaper and stronger than masonry culverts. The company plans to establish a plant in Elyria.

The Thew Automatic Steam Shovel Company, Lorain, Ohio, will shortly place contracts for a factory addition, 200 feet long, which will nearly double its output, also for a fine office building. The company has orders on its books for more shovels than can be built in the next six months with the present plant and it is busier than ever before.

The city of Elyria, Ohio, will shortly advertise for proposals on additional pumping machinery, boilers and pipe for improving its water works system.

The Crawford Gas & Electric Company, Galion, Ohio, will erect a new electric power station and will place contracts for building and equipment within the next 30 days. Plans have been prepared by S. N. Blake of Providence, R. I.

Cincinnati Machinery Market.

CINCINNATI, OHIO, February 13, 1906.

Builders of machine tools in this city report a good week. Foreign trade is very heavy, the general demand for American tools from European points being excellent. Mr. P. E. Montanus, president of the Springfield Machine Tool Company and secretary of the National Machine Tool Builders' Association, who recently returned from a business trip abroad, says:

"I found the machine tool trade in Europe, particularly in Germany, France and England, in the most prosperous condition, with many manufacturers loaded for months to come with orders, which is perhaps one of the reasons why there is at the present time a good demand for American machine tools in these countries. Since my last visit to Europe there have appeared many splendid imitations of American designs, notably on shapers and milling machines, and also special machines of the flat turret lathe and Gisholt types. Singular to relate, some of these same types made in England are to-day commanding all the way from 10 to 15 per cent. more value, so far as selling price is concerned, than the American originals. There are, however, good reasons for this, some of them being more universal and complete, with larger capacity and greater weight. I found also that many standard types of good American lathes were being sold at less price abroad than some foreign makers were selling their own product. In some other types, such as shapers, the foreign makes were considerably cheaper than the American.

"The American manufacturer hesitates a long time and deliberates carefully either as an individual or through associations before making an increase in price, while, on the contrary, the European manufacturer, who we consider belongs to the class that never changes prices, makes a change whenever conditions warrant, and without seeming hesitation. As an example of this, one prominent English manufacturer has made three positive advances within the last four months, and yet orders continue to be received, delivery to be made in four or five months. On comparing as nearly as possible the question of net profits, I am satisfied that the average European manufacturer, notably English and German, makes a larger net profit on capital invested and business handled than the average American tool builder of my acquaintance. One reason for this is the lower rate of wages, which, in a competitive shop manufacturing first-class goods, only averages 10½ cents per hour, including apprentices. I was not able to substantiate the claim made by some that an American mechanic can produce as much as two or more foreigners, for I found machine tools being run to their fullest limit and capacity and with the utmost intelligence, with bench and vise men not a bit behind our own.

"They have a good apprenticeship system in vogue, at a much less rate than we have in this country or than is contemplated by our association of machine tool builders. In England if the boy starts at 14 he does not complete his apprenticeship until the age of 21, the same rule applying to boys over 14, the rate of wages being proportionately higher as the age advances. This I consider one of the most important factors of their system, and why the cost of manufacture is so much less than ours. Wages are, however, on the increase there as well as here, which is greatly in our favor. A great deal of credit is due to the enterprising firms in Europe who are pushing American machinery exclusively, who will make a long and hard fight before permitting any reduction in the volume of trade. Then, again, the various expositions connected with the automobile shows that are being held in Berlin, Paris and London aid us much in maintaining advertising features of American tools, as this industry at the present time is one of the most important in Europe, with a large amount of capital and energy in its development.

"The new German tariff to go into effect on March 1 will not seriously disturb that particular portion of the European trade as the slight increase of price on this account in Germany's present prosperous condition, with the demand far in excess of supply, will soon be forgotten. It is true, however, that consumers and dealers are making a very serious question of this tariff, and are endeavoring to obtain deliveries previous to the inauguration of the increased cost, yet I do not think it will seriously or disastrously affect the demand for American machinery.

"Allusions have often been made to the defective manner in which shipments are boxed or packed when sent from this country to points abroad. I have, however, on this trip seen many cases of machinery that arrived in the most perfect condition, which leads me to believe that we are doing the best and strongest packing possible and that it is certainly satisfactory to receivers generally. Another thing that has met with favor is the slushing compound used as a rust preventive. The cost of castings, both of gray iron and ordinary steel, is practically the same as in this country, and as the designs, types and selling price gradually become more on a parity it will be more difficult for American tool builders to obtain a large volume of business from foreign points."

The large structural plant of the L. Schreiber & Sons Company, at Eighth street and Eggleston avenue, Cincinnati, was almost completely destroyed by fire February 10. The loss is estimated to be in the neighborhood of $300,000, covered by insurance. The company also operates a large foundry and other structural material manufactory at Norwood, and is one of the largest concerns of its kind in its section of the country.

Government Purchases.

WASHINGTON, D. C., February 13, 1906.

The Bureau of Yards and Docks, Navy Department, Washington, will soon call for bids for a new power house building at the New Orleans Navy Yard, for which a 10-ton traveling crane is required.

The Bureau of Yards and Docks, Navy Department, Washington, will soon issue specifications covering six 440 horse-power water tube boilers, two feed water heaters, induction motors, and appurtenances for the power plant at the Brooklyn Navy Yard.

The Bureau of Yards and Docks, Navy Department, Washington, will receive bids until March 17 for pumping machinery for the dry dock at the Charleston Navy Yard.

The Constructing Quartermaster, Fort DuPont, Delaware City, Del., will receive bids until February 24 for a new feed pump for Fort Mott, N. J.

The following bids were opened February 6 for supplies for the navy yards:

Bidder 9, Alliance Machinery Company, Alliance, Ohio; 18, E. W. Bliss Company, Brooklyn, N. Y.; 24, F. S. Banks & Co., New York; 28, Cutter, Wood & Stephens Company, Boston, Mass.; 29, Caldwell Bros. Company, Seattle, Wash.; 51, Geo. E. Dow Pumping Engine Company, San Francisco, Cal.; 52, De Loach Wood Working Machine Company, Norfolk, Va.; 55, Deane Steam Pump Company, New York; 57, Drew Machinery Agency, Manchester, N. H.; 61, Erie Foundry Company, Erie, Pa.; 70, Fairbanks Company, New York; 75, General Electric Company, Schenectady, N. Y.; 76, Arthur Gamwell, Seattle, Wash.; 79, R. W. Geldart,

New York; 80, Wm. Geiger, New York; 86, Hallidie Machinery Company, Seattle, Wash.; 88, Hendey Machine Company, Torrington, Conn.; 89, Handlan-Buck Mfg. Company, St. Louis, Mo.; 97, E. F. Keating Company, New York; 115, Manning, Maxwell & Moore, New York; 119, Montgomery & Co., New York; 123, National Electrical Supply Company, Washington, D. C.; 125, Northern Electrical Mfg. Company, Madison, Wis.; 128, Northern Engineering Company, Detroit, Mich.; 132, Niles-Bement-Pond Company, New York; 133, New Jersey Foundry & Machine Company, New York; 137, Oliver Machinery Company, Grand Rapids, Mich.; 140, Platt Iron Works Company, Dayton, Ohio; 145, Porter & Moore Company, Norfolk, Va.; 154, Royce & Ricketts, Washington, D. C.; 159, J. B. Roache, Brooklyn, N. Y.; 166, Smith-Courtney Company, Richmond, Va.; 176, Sherman-Brown-Clements Company, New York; 177, Sprague Electric Company, New York; 187, George C. Thomas, New York; 198, Whiting Foundry Equipment Company, Harvey, Ill.; 207, Zucker, Levett & Loeb Company, New York.

Schedule No. 317.

Class 11. One geared trimming press complete with counter shafts—Bidder 18, $2330; 57, $1965; 154, $2290.

Class 12. One 2500-pound steam drop hammer—Bidder 9, $3615; 61, $4375; 115, $3630; 132, $4373.

Class 13. One 36-inch band sawing machine—Bidder 52, $300 and $250; 57, $152; 115, $240; 137, $266; 166, $265.

Class 14. Two speed lathes—Bidder 137, $276; 166, $275.

Class 15. One 18-inch swing by 10-foot bed screw cutting engine lathe—Bidder 70, $970; 88, $900; 166, $779.83.

Class 16. One glass grinding machine—Bidder 166, $649.75.

Class 17. Four swinging jib cranes, 12½-foot radius—Bidder 128, $1543; 133, $1420; 187, $1228.12; 198, $1840.

Class 18. One double headed motor driven pedestal grinder and polisher—Bidder 89, $255; 115, $253; 125, $281.

Class 19. One nickel plating plant with supplementary outfit for copper plating—Bidder 28, $786.08; 154, $615.45; 207, $490.71.

Schedule No. 318.

Class 21. One hydraulic pump, triplex single acting motor driven—Bidder 29, $1794; 51, $1225; 55, $1510 and $1549; 86, $1399, 140, $1625.

Schedule No. 329.

Class 111. One 2 horse-power 220 volt direct current shunt wound reversible enclosed motor—Bidder 75, $187; 80, $175 and $201; 123, $130; 125, $200; 177, $135.

Schedule No. 332.

Class 160. One valve reseating machine—Bidder 24, $325; 57, $141; 70, $325; 76, $318; 79, $325; 97, $325; 115, $325; 119, $325; 159, $325; 176, $325; 145, $325.

Customs Decisions.

The Duty on Zinc Ore Now 20 Per Cent.

As the result of action taken February 10 by the Treasury Department, collectors and other officers of the customs have been instructed to levy duty at the rate of 20 per cent. ad valorem on all importations of zinc ore, under the provision in the tariff law for "metallic mineral substances." Up to the issuance of this order the ores in question have either been admitted free of duty or with an assessment of 1½ cents per pound on such lead as happens to be found in them. The Treasury's action is taken at the request of nearly 500 mine owners in Missouri and elsewhere who complained to Secretary Shaw that the low rate of duty at which the ore was being permitted to enter this country constituted a serious menace to the domestic mining industry. The Treasury administration hesitated to impose a higher duty in view of the past practice of the Department. Finally, the Secretary decided to appeal to Attorney-General Moody as to the legal points involved in requiring importers to pay the 20 per cent. duty. The Attorney-General having handed down an opinion to the effect that the Secretary of the Treasury is within his right in levying the higher duty, Mr. Shaw has issued the necessary instructions to comply with the request of the mine owners.

The Mine Owners' Protective Committee, representing the ore interests, has engaged Everit Brown and John Francis Strauss as counsel, while associated with the attorneys is Axel O. Ihlseng, a mining engineer. The importers and smelters, on the other hand, headed by the New Jersey Zinc Company, are strongly opposed to having the low assessment changed for the benefit of the miners. It is understood that the latter interests will spare no effort to secure a judicial determination of the customs classification of the ore favorable to the contention that the product is entitled either to free entry or a nominal assessment. The indications are that a representative importation of the ore will be utilized for the purpose of a test suit. The case will first come before the Board of United States General Appraisers, although there is no likelihood that that tribunal will be able to reach a conclusion satisfactory to both sides.

The litigation will undoubtedly eventually reach the Federal Circuit Court of Appeals, and probably be passed upon by the Supreme Court itself. An expert in the employ of the mine owners stated to a representative of *The Iron Age* that the ore producers merely asked that the protection accorded to other extensive interests be also accorded to their $55,000,000 of capital and their $13,000,000 of annual expenditure for labor and supplies. The importing and smelting interests claim that they have been obliged to import ores from Mexico, British Columbia and elsewhere to keep their smelters going. The further allegation is made that the domestic mine owners have curtailed the output of their mines in such a manner as to raise prices to the smelting interests and force them to look elsewhere for their supplies. It may be two years before the litigation regarding the duty is settled, and during the interim the Treasury Department will continue the assessment of the 20 per cent. duty.

The Cramp Alloy Decision.

The recent decision of the United States Circuit Court of Appeals at Philadelphia dealing with the customs classification of manganese and iron alloy and copper and tin alloy, imported by the William Cramp & Sons Ship & Engine Building Company, appears to have brought complete confusion to the classifying officers of the Treasury Department. The court held that the products were dutiable under paragraph 183 as metallic mineral substances, with duty at the rate of 20 per cent., whereas a tribunal of equal authority, the Circuit Court of Appeals at New York, in the case of the Roessler & Hasslacher Chemical Company, took the view that the merchandise was dutiable by similitude, under section 7, to ferromanganese. It is apparent that some action will have to be taken by Secretary Shaw to clear up the existing situation. There are indications that the Government will endeavor to procure additional data and make a new case for the Board of Appraisers and the courts.

The Iron and Steel Institute Meetings.—The annual general meeting of the Iron and Steel Institute will be held at the Institution of Civil Engineers, London, England, on Thursday and Friday, May 10 and 11. A circular issued by Secretary Bennett H. Brough, under date of February 1, says: "The council will shortly proceed to award Carnegie Research scholarships and candidates must apply before February 28. The awards will be announced at the general meeting. In order to be included in the voting list at the general meeting applications from candidates for membership of the Institute must be submitted to the council before Friday, March 30. In place of the ordinary autumn meeting, a joint meeting of the American Institute of Mining Engineers and of the Iron and Steel Institute will be held in London on July 23-29. The Lord Mayor of London has consented to act as chairman of the London Reception Committee, and will give a conversazione at the Mansion House on the evening of July 24. The annual dinner will be held in the Grand Hall of the Hotel Cecil July 27. A programme of the visits and excursions to be made during the meeting will be issued when the arrangements are sufficiently matured. Members of the Institute are invited to take part in the Sixth International Congress of Applied Chemistry, to be held in Rome from April 25 to May 3. One of the sections of the congress is devoted to metallurgy, and among the excursions will be one to the iron works of the Island of Elba. The subscription to the congress is 16 shillings."

Trade Publications.

Beam Shears.—Henry Pels & Co., 68 Broad street, New York City. Pamphlet. Contains a number of testimonial letters concerning the company's products.

The O'Neill Rapid Tube Cutter.—Catalogue of 16 pages. Illustrates and describes a device which is offered to the trade by Christopher Murphy & Co., First National Bank Building, Chicago, as the "only perfect tool on the market" for cutting boiler tubes or flues either inside or outside of the boiler head. The tool operates on the combined principle of the roller pipe cutter and the inside casing cutter. It is made in two sizes only, to cut all sized tubes from 2 to 4 inches inclusive. The machine is furnished with ball bearings to minimize friction, may be easily operated by hand with a common wrench, but is used preferably with an air motor. The illustrations show the cutter and the method in which it is used.

Roofing Rules.—A handbook on sheet metals in building construction for architects, owners, engineers and builders. Issued by Merchant & Evans Company, Philadelphia. Pages 52, 5½ x 8 inches. This is a remarkably comprehensive work. It outlines the various classes of roofing and then analyzes the qualities of roofing with respect to their lightness in weight, ease of repair, their resistance to storms, fire and lightning and to their value in ornamentation. The merits of wood shingles, slag, gravel and composition roofs, terra cotta and slate shingles and cement are taken up in turn, as are metallic roofs, such as tin and copper tiles, corrugated galvanized iron, sheet copper and roofing tin. Perhaps the most interesting portion to many is the account of the processes of tin plate manufacture, the information concerning the thickness and evenness of tin plate coatings and the assortment and gradings of plates after coating. Of a directly practical nature is an essay showing how to construct a metal roof. A table is given of the approximate weights of roofing materials for 1 square foot of roofing surface. The book is a valuable contribution to the general subject of metal roofing. It is also a handsome piece of work from a mechanical standpoint.

Steam Turbines.—Kerr Turbine Company, Wellsville, N. Y. Introduces the newly formed company to the trade announcing its personnel and contemplated product. An extensive description of the turbine which is to be manufactured is given with much concerning its principles of operation. Unlike the new forms of steam turbines, most of which follow in theory lines similar to the water turbine, the Kerr steam turbine more nearly resembles a Pelton water wheel. The range of sizes at present offered are from 5 to 1000 horse-power.

Wood Working Machinery.—American Wood Working Machine Company, 136 Liberty street, New York City. Catalogue. Size, 9 x 12 inches; pages, 320. Cloth bound. This is a very commendably arranged general catalogue, covering a complete line of machinery for use in planing mills, sash, door, blind, box, furniture, cabinet, car, agricultural implement, pattern and general wood working shops. It does not include the special and miscellaneous machines which are also manufactured. The first few pages contain a telegraph code and the last few pages an index, and the body of the book in the main consists of alternate full page illustrations and facing pages of specifications and descriptions. Its general rule is not followed in the smaller machines and accessories, and other exceptions are double page illustrations of very large machines.

Pressed Steel Poles.—Pressed Steel Tool Company, Pittsburgh, Pa. Catalogue. In a general way it describes a line of poles made from rolled structural steel, suitable for telephone, telegraph, trolley, electric light, semaphore, signal and other purposes. The company also manufactures fittings such as cross arms, collars, clamps, brackets, steps, &c. A number of general types receive individual illustration and description.

Stranding Machine.—The Alton Machine Company, 126 Liberty street, New York. Bulletin No. 2. Describes the company's 8-drum stranding machine, which carries spools 8 x 12 inches at a speed of 200 revolutions per minute. The entire machine is mounted on a stiff bed plate and is equipped throughout with cut gearing.

Electrical Apparatus.—Fort Wayne Electric Works, Fort Wayne, Ind. Bulletin and instruction book. No. 1071 deals with steam power motors, listing a number of sizes and illustrating typical applications. No. 1072 pertains to type S, single phase motors. No. 1074 to multiphase induction integrating type K watt meters, forms M A B, M A C. Instruction book No. 3022 explains the construction, installation and operation of type M multiphase induction motors.

Electrical Instruments.—Weston Electrical Instrument Company, Newark, N. J. Catalogue No. 15. Size, 8 x 10½ inches; pages, 126. Introduction discusses the early history of Weston instruments, their characteristic features and instructions for handling and repairing. The remainder of the book is divided into four parts, dealing respectively with portable and laboratory instruments, portable instruments for alternating and direct current, switchboard instruments for direct current and diagram of dimensions, and condensed price-list of switchboard instruments. Illustrations are effectively used in showing the form and use of the instruments.

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HARDWARE

THE account given in our last issue of the discussion at the convention of North Dakota Hardware merchants in regard to the pure Paint law recently enacted by the legislature of that State is certainly suggestive and opens up a broad and interesting field of inquiry. The object of the law in question, as given in its title, is "to prevent the adulteration of or deception in the sale of White Lead or Mixed Paints," a matter which may or may not in the judgment of people generally call for legislative action. In accordance with the provisions of the statue, which is said to be substantially the same as one which was used with only limited success in a neighboring State, Paint which contains certain specified ingredients can be sold freely within the borders of the State, but the manufacturer who sells Paint containing other ingredients is liable to fine and imprisonment unless the label on each can or other package shows the composition of the Paint and the accurate percentages of all the ingredients which have entered into it. At the convention there were present able representatives of the opposing interests, those who argued for the law as necessary and wise, and justified as furnishing a safeguard against the adulteration of Paints; those who denounced the law as probably unconstitutional and certainly unwise, impracticable and injurious. Without attempting to pass on the main question, which will probably be determined by the courts, there is embodied in this law a delicate compliment to the people of North Dakota, in that it is assumed that they have no use for any Paint but the purest and the best. Anything of lower grade, even though it sell at a lower price and have a fitness for certain uses in other parts of the country, is not good enough for them. They are entitled to and are determined to have the best and only the best.

But why stop at Paints? It is admitted that material of low grade and short fiber is sometimes used in the manufacture of Rope. The coating of Tin Plates is frequently woefully thin and of at least questionable quality. Garments which purport to be wool have been known to contain a mixture of cotton or some inferior substitute. Low grade steel sometimes finds its way into Pocket Knives, and the galvanizing on various products and the enameling on many a Kettle is far from what it should be. A very honorable and unique position will certainly be accorded to Paint if the principle applied to this important decorative and preservative commodity shall in course of time be applied to many another line of products. In that event the welfare of the people will be so carefully safeguarded that the perplexities of purchasing will be reduced to a minimum, because the State passes upon the manner in which all important products offered for sale within its borders are made, and protects its citizens by denying them the opportunity of purchasing without knowing it articles of inferior quality.

If other States should follow the principle involved in the action of the pure Paint law it is to be presumed that their legislative and official descriptions of what is essential to the securing of the highest quality of various products will differ greatly, each of these commonwealths being a law unto itself. There will thus be, there is reason to apprehend, new troubles for the manufacturer of Paint, or Pocket Knives, or Cordage, or cloth, whose products must thus be passed upon. If he attempts to market his goods in many States there is reason to fear that he will encounter a multitude of new perplexities and have on the whole rather a hard time.

The application of this principle will assuredly require more care than legislators usually give to such matters if there is to be a wise determination as to how all these commodities are to be made so as to entitle them to State indorsement—a reflection which is perhaps justified by the fact asserted by the opponents of the law in question, that it is impossible to make Paint with the ingredients and according to the description embodied in the North Dakota law! Lawmakers in some States, to say nothing of corrupt influences to which they are sometimes subjected, have been known to act inconsiderately or with very limited knowledge in matters with which they are in a general way familiar. Statutes, however, of the character of the one under consideration, require technical and expert knowledge the ordinary legislator is not expected to possess—knowledge which, by the way, is acquired by manufacturers through the employment of the best experts obtainable and after unwearied experiment and the costly experience of years. To expect the lawmakers of a State to condense all this into a statute, giving a formula which shall embody an official description of the materials and method of making the article in question, so that the product shall be entitled to State indorsement as the purest and the best, presupposes an extraordinary knowledge and ability on the part of the legislators.—For graft and corruption, too, when this kind of legislation comes into vogue how many doors will be thrown wide open!

Condition of Trade.

From practically all quarters come reports of excellent trade with the elements which go to make up satisfactory business conditions—active demand, steady prices, exemption from labor difficulties and freedom from financial disturbances. To be sure there is some difficulty here and there from the lack of sufficient transportation facilities, and owing to this cause, together with the heavy demand on the mills, there is in some lines a perceptible scarcity of raw material. The character of the winter, too, has interfered to some extent with the sale of certain classes of goods, especially those which are dependent on cold weather for a normal consumption. On the whole, however, the moderate temperature which so long has prevailed contributes to the movement of trade, especially as outdoor operations have in many parts of the country been continued without anything like the usual interruption. The steadiness, not to say strength, in market values for Iron and Hardware products, has increased the confidence with which manufacturers produce and merchants purchase goods. During the present month many merchants will be giving attention to their State conventions, thus leaving for a few days the details of business to their partners or subordinates while they get in touch with their fellow tradesmen and with the suggestiveness and enthusiasm of such gatherings. The usefulness of these conventions is evidently to be increased

from year to year, as they become broader and more conservative in their views of trade questions and more practical and helpful in regard to the actual conduct of business. Manufacturers and wholesale houses also are giving attention to these gatherings as a means of cultivating relations with the retail trade and getting into personal touch with the merchants. All these things are working together to bring about the establishment of proper relations between the various classes of trade, and the result should be to the advantage of the manufacturers and of the merchants, large and small. While these conferences are going on trade fortunately is undisturbed, and goods in great variety and volume are constantly moving along trade channels and finding their way into the hands of the consuming public, thus calling for the continued activity of producers and distributers all along the line.

Chicago.

While conventions are largely engaging the attention of Western retail merchants, the volume of business that is being placed with the jobbers is heavy considering the season, and the total for the month shows a big increase over the same period last year. The cold weather now prevailing throughout the West and Northwest has temporarily checked the demand for Wire Nails, Poultry Netting and Fencing, which had been unusually heavy all winter and a belated demand for cold weather goods has set in, much to the relief of the retail merchants who have been carrying heavy stocks, and the weather conditions until this month did not favor their movement. Price changes continue numerous and without exception upward. The recent decline in Ingot Copper has not yet been followed by a proportionate reduction in finished material, and no price changes will be made until the market for raw material becomes settled and the consumers are assured that quotations can be maintained for a reasonable period at least. The manufacturers of Stove Boards have issued their list to the trade and prices are somewhat higher than were ruling last year, when competition among distributers and manufacturers forced quotations down to cost. Another advance of $1 a ton has been made in Hoops, although Bands remain unchanged. It is hardly probable that this advance will result in higher values to the retail trade, as the present spread between mill and jobbers' quotations is about sufficient to absorb this slight increase in price. Jobbers in Heavy Hardware continue to enjoy a big demand for all classes of material, and the sales of Merchant Steel Bars from stock on account of the deferred mill deliveries are heavier than at any time in the history of the trade. No change has yet been made in the store prices of Iron Bars, although mill prices are sagging. The growth of the Heavy Hardware trade in this section has been phenomenal in the past year, one jobber already being compelled to seek larger quarters and another is considering the erection of a new and more commodious warehouse. Builders' Hardware is in good demand and the impending advance in prices on March 1 has brought out much business, the closing of which would otherwise have been deferred until later in the season.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—If it is true that variety is the spice of life, this winter will be credited with adding zest to the experiences of the Hardware fraternity. It has even made interesting the hackneyed subject of weather and discounted the experiences of most of us by its vagaries. We have no doubt the average Hardwareman will carry tangible reminders of it in the shape of Snow Shovels, Skates, Sleigh Bells, &c., for many months to come, and early orders for the season of 1907 will be correspondingly curtailed for these lines. We hear complaints of this unseasonable condition from Texas to Canada, but the wail is always mixed with a report of satisfactory sales of Builders' Hardware, &c., which more than compensates for the loss of strictly winter stuff.

The enormous demand for Structural Steel, Builders' Material and House Furnishing Hardware was never better locally, and in common with other older cities of the country Philadelphia is rebuilding on a scale that would seem only to be justified by a widespread conflagration. In our sister city it is estimated that ten times as much Structural Steel will be used during the present year as Baltimore has used since the conflagration destroyed her business section. The advancing values in cities of the first class have compelled property holders to go up in the air or go out of business, and while many people would prefer to wait for lower prices before rebuilding, they are forced to do so at once by the yearly increasing assessments of their holdings.

This city inaugurated and held last week the first exhibition in display of local manufactures. The great department stores along Market street, from Seventh to the City Hall, devoted their show windows to a display of Philadelphia made goods, and a portion of their interiors to working exhibits, making a unique and very interesting trade exposition. Baldwin Locomotives, Cramp's Battle Ships, Stetson's Hats, Disston's Saws, Lawn Mowers, Tools, Shoes, Textiles and a vast variety of manufactures were exhibited, bringing out to our citizens and visitors the well established fact of Philadelphia's leadership in the extent and variety of manufactured goods.

Cleveland.

THE W. BINGHAM COMPANY.—If people throughout this great and glorious country would appreciate the immense amount of business that is being done in all kinds of manufactured goods in all sections of our country and would stop and think what it means to move such large quantities as are being transported, there would be less complaint of slow shipments. Every one is eager to get his goods quickly, and we all seem to think we ought to be waited on first.

To give you just a faint idea of what the railroads are up against at the present time, and have been for the last 30 days, would say that in January the Lake Shore & Michigan Southern Railroad Company between midnight one day and midnight the next moved more than 18,000 cars between Buffalo and Chicago. Take the minimum capacity of each car—viz., 30,000 pounds—and there is shown a movement in that one day of 540,000,000 pounds of freight on one road; then increase the car capacity to 40,000 or 50,000 pounds, which many of these cars will carry, and note what a stupendous amount it will show.

Now we mention these facts merely to put before our friends who, perhaps, are not conversant with them, and who many times get very impatient because they do not get their goods as quickly as they think they should, an idea of the immense amount of traffic that is going on throughout our country.

In previous articles we have urged our customers to buy freely of shelf goods, because we felt then, and we feel now, that at the prices which some jobbers have been offering, and are still offering on these goods it is to their advantage to stock up quite liberally and take their chances of getting them within a reasonable time.

Statistics prove that although there is an advance in raw material, finished goods and labor (and labor was never so high as at present), it does not seem in the least to curtail the erection of residences, business blocks and manufacturing plants all over the country. Why? Because everybody is prosperous and money is plenty and cheap, and every one is enjoying a good, healthy trade.

We believe that Builders' Hardware is a good purchase at the present time, as the manufacturers announce an advance that will take place March 1. Mechanics' Tools, Mining, Milling and Manufacturers' Supplies are good purchases.

The January trade for this year is exceedingly large. February bids fair to eclipse former periods at the same time of the year.

Immense quantities of Wire Cloth and Netting are going forward, but at prices that are not remunerative to the jobber. We think we advise correctly when we say to the dealers who have not bought to buy at once, for there is a good chance for an advance on these goods very soon.

Now that the trade understands the situation on

Screen Doors and Windows—viz., that the prices made by the combination of large manufacturers this year are going to be sustained—orders are coming in quite freely. Those who put off ordering will find they will be shy the goods to sell later on. It looks as though the manufacturers will not be able to make up the quantity of goods that will be called for unless the retail dealers get specifications in very soon. Don't be afraid to stock up liberally at present prices. Well assorted stocks will bring you more profit than will money lying idle in the banks.

Louisville.

BELKNAP HARDWARE & MANUFACTURING COMPANY.—The new year continues to make good its promise of good things for the Hardware trade. More seasonable weather prevails after the January record breaking hight of the thermometric column, which started buds on the maple trees and brought the red birds into our back yard from the South. From 73 degrees or over we were treated to a cold plunge to zero and below, with snow and a river full of sharp floating ice. This, while disturbing in some ways, as it puts more freight on the already crowded railroads, will at least save us bills next summer for microbe killer preparations. At least, people think so, and that is as good as a genuine prescription.

Of course, we are all interested in what occurs at Washington and in what our own State Legislatures are doing. A marked feature of the proceedings is seen to be extravagant language and more intolerance of difference of opinions than ever before. The treatment of Senator Patterson's declaration will mark this, and also Mr. Cochran's expressions in reference to the railroads. It would seem as though the author of "Frenzied Finance" had set the pace for literary and forensic style for the present session at least.

The differences brought out in the Coal Miners' Convention are something which, of course, concerns the country at large. There again one of the delegates from Pittsburgh has set at defiance the demands of the intolerant brethren of the order. If the present consuming demand for all manufactured goods keeps up we should not be surprised to see certain concessions made by the operators before the struggle is over. While great advances have been made in the wages to miners, according to the statement of those best informed and who are authorized to speak, during the past five or ten years, yet the cost of living has increased and the calling of the miner is certainly a hazardous one. In most of the cities the tendency is to bestow pensions upon policemen and firemen and their families on account of the hazard of their calling, but statistics show the hazard of the miner is far greater than either of these occupations. The fact is the police after serving a short time become so portly that it is hard for a stray bullet in a street fracas to escape hitting some of these gentlemen who take up so much room. Often it is not the fault of the man behind the gun.

The meetings of the various State retail associations are in progress, and while there is more or less of the commonplace about all such meetings, yet there are always a few choice sprits who enliven the proceedings by sprightly remarks and discussion of matters which are well worth being thought of. One result of these meetings has certainly been an improvement in the stocks and arrangements of the average retail store in the smaller towns.

Nashville.

GRAY & DUDLEY HARDWARE COMPANY.—The Hardware business in the South is much better this spring than it was last. Sales for January show a larger increase over January, 1905, and February is running the same way.

The splendid weather that we are having is making everybody want to buy goods, from the consumer up to the jobber, and an enormous volume of business is being transacted.

The movement of spring and summer goods is now pretty heavy, and a great many shipments are going out for Wire Cloth, Screen Doors, Ice Cream Freezers, Poultry Netting and other lines of this nature.

The prices are steady, and we do not see any weakening on any lines. Most of the jobbers are getting the advances that have taken place during the past three or four months, and we believe that this spring will be the best that the South has had for many years, and we cannot see any thing at the present at least except good times ahead of us.

Collections are very satisfactory.

Baltimore.

CARLIN & FULTON.—The comparatively mild weather which has ruled during most of the present winter contrasts most favorably with the experience of last year, when we were both snow and ice bound for several weeks, the country roads almost impassable, our harbor and its tributaries closed, and trade almost paralyzed. This year the sale of certain seasonable articles, such as Skates, Sleigh Bells and Snow Shovels, has been almost nothing, but on the other hand all outdoor work has continued without interruption and the shipments of Nails and Wire and Agricultural Tools have been as active as they ordinarily would be several weeks later. Building operations have gone right along with the exception of an occasional interruption in concrete construction.

The farmers generally have never received as much for their products as they are getting at the present time. Cotton is high and the planter has had the advantage of price instead of the speculator, as heretofore. Wheat and corn are both bringing most excellent prices, and it now pays to raise horses, which was not the case a few years ago. We also understand that the leather trust is sending traveling men all over the country buying hides wherever obtainable, and, in fact, there is a good price for everything raised. In manufacturing districts labor is well employed, the difficulty being the supply of hands, but we regret to hear of the impending trouble in the coal regions and hope that arbitration will bring all parties to a settlement of their differences and thereby avert the loss and suffering resulting from strikes and lockouts.

With but very few exceptions the market is strong, with an advancing tendency, but it remains to be seen what will be the action of the Axe manufacturers by March 1. Will the diplomacy of Mr. Parks be great enough to continue the association, or will there be an open market? The Nail manufacturers state that the market would stand very easily another advance in Nails and Wire, and no one would be surprised to see higher prices announced. The same argument might apply to many other goods, the present prices of which are low as compared with the higher prices for raw material.

St. Louis.

NORVELL-SHAPLEIGH HARDWARE COMPANY.—The first month of the year 1906 has passed. Its record with us has been very agreeable, and if it is an augury of the manner in which all the months of 1906 will treat us we will be very well satisfied indeed.

The month of February has come in with the only real winter weather we have had. Mr. Groundhog obtained an excellent glimpse of his own shadow, and succeeding days have proved that the old superstition regarding him is true. The touch of winter we have had since February 1 has been general and very acceptable. It has enabled dealers to work off to some extent accumulations of winter stock on hand; the freezing up of the ground stopped the swelling of the buds and the flow of the sap in time to prevent any great damage, and we all feel better, bodily, for the cold weather we have had this month.

The movement of Hardware is brisk, particularly in seasonable goods. The only fear is that a good many of the retailers have put off purchasing their spring goods so long there may be some congestion at the factories and some delays in shipment of these seasonable articles.

February seems to be the month of retail conventions. These are always interesting, and we are pleased to note that almost all State retail associations are growing stronger, are taking into their membership a large percentage of the retail Hardware dealers in their State and are working together more harmoniously, with much bet-

ter effect. We congratulate them on their work and wish them unbounded success.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—There is nothing but good to chronicle in the Pacific Northwest this week. So far we could hardly have had a more open or pleasant winter, one where autumn seemed to fade imperceptibly into spring, with no winter intervening. Farming, stock and building interests have all been favored, work at no time being suspended. Trade consequently has been, both in volume and class of goods sold, of an unusual demand. As tending to show that no slump followed the Lewis and Clark Exposition, the United Cigar Stores Company has leased for ten years, at $60,000 a year, property that sold some three years ago for $550,000, lessee to pay all taxes and insurance, and will expend $70,000 in improvements. The U. S. Leather Company has this week leased a warehouse to make Portland its Pacific Coast headquarters in buying and handling hides. Real estate is booming, and building, both in hand and contemplated, is on a scale never before seen here.

Money is easy, our leading savings bank paying 3 per cent. on yearly deposits, while the First National Bank has $12,250,000 on which it pays no interest. Pretty good for a backwoods web-foot town.

St. Paul.

FARWELL, OZMUN, KIRK & CO.—This year's business thus far has been quite satisfactory. We do not now recollect a winter in the past 20 years that was more favorable for out door operations. This condition has increased very considerably the demand for Hardware, so that January sales have been somewhat beyond expectations.

The prospects are very favorable for spring business and a satisfactory trade may be expected if the weather conditions are not against it. Substantially all lines of business have started the new year with much encouragement and there is nothing in sight that would justify any feeling of distrust in the year's trade.

We may confidently expect a very satisfactory trade during the first half of the year. Of course, the trade of the last half will depend very largely on the conditions of the new crop. There will be about the usual amount of money in circulation during the next six months and we may expect collections as well as trade to be satisfactory. There is no reason now to be seen why business should not be more favorable during the last half of the year than it was in the corresponding period of last year.

Referring to our house, we are just at this time in the midst of the work of removal to our new building, in which we shall be pleased to receive any of our Hardware friends throughout the country who may contemplate a visit to the Northwest.

NOTES ON PRICES.

Wire Nails.—The new business which is being received by the mills from day to day, together with liberal specifications on contract orders, has caused a falling behind on shipments. Notwithstanding the reported advance of $1 per ton in Wire Nails by some of the daily papers, no change has been made in prices. Quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers	$1.85
Carload lots to retail merchants	1.90

New York.—Local demand is moderate and prices are fairly well maintained. Quotations on small lots from store are on the basis of $2.10 per keg.

Chicago.—New business has fallen off to some extent, which is naturally expected at this season of the year, and this is the only logical condition that could follow such a tremendous buying movement, which has continued practically for a period of three months. Specifications, however, are very heavy and are in excess of mill shipments. That distributers and consumers should continue to specify so heavily at this time would indicate that the recent severe weather was not far-reaching in its effect and did not curtail consumption to any great extent. Reports of an advance in price have emanated from the East, and while an advance on all Wire products is looked for in the near future it is hardly probable that any action will be taken prior to March 1. Quotations are unusually well maintained and are unchanged, as follows: $2 in car lots to jobbers and $2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mill.

Pittsburgh.—We can report a continued active demand for Wire Nails, and new business being entered by the mills, together with old contracts taken some time ago, on which buyers are specifying very freely, keeps the mills filled up and also somewhat behind in shipments. The tonnage and shipments of the American Steel & Wire Company in January were approximately 20,000 tons larger than in the same month last year. The continued scarcity and high prices of steel, together with the excellent condition of the Wire Nail trade, warrants the belief that prices may be advanced at any time. The market is in most excellent shape in every way, prices being very firm, as follows: Wire Nails, $1.85 in carloads to the large jobbing trade and $1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—Demand in the way of new business is moderate, but mills are busy filling specifications on contract orders, placed previous to the last advance. It is understood that the advance is being maintained. Quotations are as follows: $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2.00 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—The demand in the local market is about in proportion to that of Wire Nails. Prices are fairly well maintained, but all jobbers are not obtaining the recent advance of 5 cents per keg. Quotations for small lots from store are on the basis of $2 per keg.

Chicago.—New tonnage continues comparatively light, a condition which is always expected by the manufacturers during the month of February. Nevertheless, specifications on contracts placed before the recent advance are numerous and are of sufficient volume to insure full operation for all the mills. We make the following quotations: Steel Cut Nails in car lots, $1.95; less than car lots, $2; Iron Cut Nails, $2.05 in car lots; less than car lots, $2.10.

Pittsburgh.—New demand for Cut Nails is only fair, but the mills are well filled up on old contracts, on which buyers are specifying freely. It is stated that the recent advance of 5 cents a keg in prices is being firmly held. We quote Cut Nails as follows: $1.80, base, for carload lots, f.o.b. Pittsburgh; $1.85 for less than carloads, f.o.b. Pittsburgh; $1.95 for carload lots, on dock, New York; $2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—The scarcity and high price of Steel are regarded as sufficient reasons for higher prices in Wire and Wire Products. Mills are engaged in filling specifications on contract orders, and the moderate amount of new business which is being received. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots	$2.00	$2.30
Retailers, carload lots	2.05	2.35
Retailers, less than carload lots	2.15	2.45

Chicago.—Specifications are coming in very freely and large jobbers report a wide distribution, notwithstanding the recent severe weather, which, according to reports, did not interfere with the movement to any great extent. Quotations continue well maintained and are unchanged, as follows: To jobbers, Chicago, car lots, Painted, $2.15; Galvanized, $2.45. To retailers, car lots, Painted, $2.20; Galvanized, $2.50. Retailers, less than car lots, Painted,

$2.30; Galvanized, $2.60. Staples, Bright, in car lots, to jobbers, $2.10; Galvanized, $2.40; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—A moderate amount of new tonnage is being placed by the mills and specifications on contracts are coming forward very freely. The satisfactory condition of the market, together with scarcity and high prices of Steel, may possibly bring about an advance in prices this month. The market is very strong and as follows: Painted Barb Wire $2 and Galvanized $2.30 in carload lots to the large jobbing trade, with the usual advance of $1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—There is comparatively little new business being received by the mills. They are, however, filling specifications on contract orders which were especially heavy earlier in the season. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12&12½	13	14	15	16
Annealed	Base	$0.05	.10	.15	.25	.35	.45	.55
Galvanized	$0.30	.35	.40	.45	.55	.65	1.05	1.15

Chicago.—The mills are receiving very little new business, although specifications at the present time are heavier than during the month of January. Quotations are firmly maintained and consumers are anticipating an advance in the very near future. Quotations are unchanged, as follows: To jobbers, $1.85, f.o.b. Chicago, in car lots, and car lots to retailers, $1.90.

Pittsburgh.—The mills are filled up with contracts from the Fencing manufacturers and are operating their mills to full capacity and are making very heavy shipments. There is some talk of an early advance in prices and this may possibly be made this month. The market is very firm and there is still difficulty in getting prompt deliveries of Steel. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads	$1.70
Retailers, carloads	1.75

The above prices are for base numbers, 6 to 9.

Paris Green.—Prices have not been made by manufacturers of Paris Green owing to the high price and unsettled market of Arsenic. Orders for Green are being accepted by makers, subject to future price.

Rope.—The market continues in about the same condition as since the first of the year. The demand is seasonable and the market is especially firm on Manila products. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality Sisal, 8 cents per pound.

Window Glass.—Notwithstanding the fact that the project of organizing the manufacturers has fallen through, the Window Glass market has remained firm. This is taken as an indication that manufacturers are not carrying large stocks of Glass. A leading manufacturer of Glass is reported as saying that the volume of business during January and thus far in February has not been equaled for years. Small sizes of C Glass are understood to be scarce. Local quotations are as follows: First three brackets, single, 90 and 20 per cent. discount; all other sizes, single and double thick, 90 and 10 per cent. discount.

Linseed Oil.—Business is moderate and confined to small lots. Crushers are asking from 40 to 42 cents for contract orders on out of town Raw Oil, but some are not willing to book orders even at these prices. There is no pressure being brought to bear by crushers to sell. Prices remain unchanged, as follows: Out of town Raw, 42 to 43 cents; City Raw, 44 and 45 cents per gallon; Raw, Calcutta seed, 65 cents per gallon. Boiled Oil, 1 to 2 cents advance over Raw.

Spirits of Turpentine.—In view of light receipts and a good buying demand in the Southern markets, Turpentine advanced in this market about 1 cent per gallon above last week's prices. Local demand is moderate. New York quotations are as follows, according to quantity: Oil Barrels, 68½ to 69 cents; Machine Made Barrels, 69 to 69½ cents per gallon.

UNDERHILL, CLINCH & CO.

UNDERHILL, CLINCH & CO., 94-96 Chambers street, New York, wholesale merchants in general Hardware, have arranged with the Reading Hardware Company, Reading, Pa., to add to their lines a full stock of Shelf and Builders' Hardware manufactured by that company and will in the immediate future be in a position to supply the needs of their customers more promptly than heretofore. Underhill, Clinch & Co. will carry in stock such goods as are called for by the trade in Greater New York and vicinity, which is the territory covered by them. This house has long and successfully represented as selling agent a large number of manufacturing concerns in the front rank, among which are the American Screw Company, Oliver Ames & Sons, Henry Disston & Sons, Coldwell Lawn Mower Company, Nicholson File Company, Geneva Tool Company and others of like character. The business of this popular and energetic house was established by its predecessors a half century ago.

FARM IMPLEMENT BUYERS' GUIDE.

THE FARM IMPLEMENT NEWS COMPANY, Masonic Temple, Chicago, Ill., has just issued the sixteenth annual revised edition of its Buyers' Guide. It is a cloth bound book of 610 pages, each 6 x 9 inches, showing exhaustively the manufacturers of Farm and Garden Implements, Wagons, Carriages and other Vehicles, Gasoline Engines, Wind Mills, Pumps, Dairy Apparatus, and the innumerable accessories sold by Implement dealers. The first 355 pages contain classified lists of articles; pages 356 to 435 are devoted to the Vehicle classification, following which is a general directory of the various manufacturers, arranged alphabetically by States and post offices, giving under each name and address a full list of all goods made by each manufacturer and a list of branch houses, jobbers and transfer houses for the current year, as furnished by the makers.

AUSABLE HORSE NAIL COMPANY.

THE annual meeting of the stockholders of the Ausable Horse Nail Company was held at the company's offices in Keeseville, N. Y., in January, at which the following directors were elected, viz.: George N. Kingsland, J. Alfred Baber, E. K. Romeyn, Howard T. Kingsbury and M. J. Callanan. The directors at a subsequent meeting elected the following officers for the ensuing year, viz.: George N. Kingsland, president; J. Alfred Baber, vice-president and treasurer; E. K. Romeyn, secretary; M. J. Callanan, assistant treasurer, and J. N. Stower, general manager. It is the intention of the company to discontinue the branch house at 10 Murray street, New York, on March 1. In the future all shipments will be made direct from the factory in Keeseville, where correspondence of every description should be sent.

At the recent annual stockholders' meeting of the F. W. Heitmann Company, Houston, Texas, Felix Fourcade and John W. Dittmar were elected directors. The former has been connected with the Heitmann Company for 30 years, within which period he has held various positions of trust. The latter has for ten years been one of the active employees of the city sales department. The resignation of Robert Eikel, as director and secretary, was received with regret. The directorate of the company is now as follows: Mrs. M. M. Heitmann, Mrs. T. C. Lorenzen, F. A. Heitmann, Felix Fourcade, John W. Dittman and H. A. Neumann. At a meeting of the directors the following officers were elected: F. A. Heitmann, president; Mrs. T. C. Lorenzen, vice-president, and H. A. Neumann, secretary and treasurer.

Correspondence.

The Western Heavy Hardware Jobbers' Catalogue.

To the Editor: My attention has been called to the great amount of valuable space in your publication which has been devoted for the past two or three weeks to the proposed catalogue of the Western Heavy Hardware Jobbers' Association, and I have noticed particularly the strenuous efforts of one "Ed. Ford" to make an unfavorable criticism on something he knows nothing about, and should our surmises be correct as to the identity of this party I feel sure that correspondence with the advertising manager of this catalogue would disclose the true reason for his perturbed state of mind.

While the interested parties feel that this catalogue proposition needs no defense, inasmuch as you have seen fit to print so much about it, in justice to the parties concerned I do not think you can refuse to print the following facts:

In the first place this catalogue is not a jobbers' catalogue—no jobber's name will appear on same. It is a compilation of standard goods carried by the majority of the Heavy Hardware houses in the West, who have heretofore advertised these articles under their own name.

Owing to the combinations which have been formed by the manufacturers of most of these articles the cost of same to the jobbers has reached a point where it is impossible for the jobbers to be as liberal in advertising these goods as they have heretofore, and it was deemed best by a majority of the jobbers to select those articles which are standard and which are carried by all of the houses and list same in one book which would be issued from the secretary's office of the jobbers' association, and the jobbers could then confine their own catalogues to their specialties and to a reference that on all other standard articles they were prepared to fill orders for goods as listed in the Standard Heavy Hardware catalogue.

The mailing lists for these catalogues are to be compiled from the live customers of the different jobbing houses, and where the same name appears on different lists one catalogue only will be sent. This manner of distributing same insures the fact that every consumer of these goods in the territory covered by the jobbers interested will receive one of these books. A mailing list so compiled cannot help but be the best possible. It insures the distribution of these books direct to the consumer.

Now bearing in mind the fact that it is advertisement of merchandise and not the jobber, who receives the most benefit, the manufacturer or the distributer?

It was the original idea of the parties interested that the expense of this would be prorated among the jobbers. Several leading manufacturers who were talked to regarding the proposition volunteered to help share the expense, recognizing at once the value of such a book to them. It was then decided to present the plan to the manufacturers, and if they saw fit to contribute toward the proposition they would be allowed to do so. They have been told in every case that if their goods were carried by a majority of the houses interested they would be listed in the book whether they contributed or not, but that the amount of display given to same would depend largely on the amount which they felt it would be worth to them.

This is most eminently fair, for the reason that every manufacturer has an inflated idea as to the amount of space which ought to be given his line in the book, and in no other way could the relations of jobbers with their different friends in the manufacturing line be maintained without receiving some remuneration for the space over and above that which was absolutely necessary to represent their line.

The committee in charge of this work has been solicited by many manufacturers to list their line alone, and they have been offered exorbitant sums for exclusive rights in this book, to all of which the committee has turned a deaf ear, and as intimated above we feel confident that should the alias of the gentleman who has been filling up your columns be made known, a very severe case of sour grapes would be discovered.

Manufacturers spend thousands of dollars annually for printers' ink. In the majority of trade publications, yours included, not 25 per cent. of the circulation reaches the consumers of any particular line. Now, if the jobbers give the manufacturers the privilege of advertising their goods under their own name, and sending it direct to the actual consumers, and in addition give them the benefit of their hundreds of traveling salesmen, who will have only this book to sell from, by what line of reasoning can you figure that trade paper advertising pays and this does not?

The writer is the chairman of the Catalogue Committee and is responsible for all that has been written and done in regard to same, and I am surprised that a paper of your character should devote so much of the few pages which you take from your advertising space to a question of this kind without proper investigation and arriving at the facts of same.

This whole matter is another case of "locking the barn after the horse is stolen." The compilation of this catalogue is finished, all of the advertising which can be taken has been received, and it is, without doubt, foolish on the part of those interested to pay attention to the unjust accusations which you have seen fit to print.

As a matter of news would say that of all the manufacturers interested only one has paid any attention to same, to our knowledge, and the standing of the different jobbing houses, names of which have been given to all interested parties, is such that we feel sure that the only place we have laid ourselves open to censure from any fair minded man is in writing this letter or paying any attention to the attacks which you have seen fit to make, the only truth in any of same being contained in the head line of your issue of February 8, which is that "they are *too funny* and *too ridiculous*" to receive any consideration for a moment. W. M. THOMPSON,

Chairman Catalogue Committee.

BELKNAP'S NEW WAREHOUSE.

PLANS for a nine-story warehouse, the largest ever projected in that city, have been prepared for the Belknap Hardware & Mfg. Company, Louisville, Ky. Although definite decision has not yet been made to erect this large building it is believed that final contracts will be let before the middle of the summer. The warehouse is to stand on property already owned by the company at the northeast corner of First and Washington streets, just in the rear of the Galt House. The company is just completing a seven-story cement building at the foot of Second street, two floors of which will be occupied by the offices. The projected building will occupy a lot about 150 feet square. It will be constructed of brick and stone and will be so arranged that ample access to the railroad yards in close proximity will be had. The building completed will represent an outlay of about $300,000.

THE ALLERTON-CLARKE COMPANY, 97 Chambers street, New York, has recently been appointed selling agent for the Uwanta Wrench Company, Meadville, Pa., manufacturer of the Uwanta Combination Wrench, illustrated in these columns January 18, last. The Wrench has square jaws on one side and pipe jaws on the reverse side, with both rapid and screw adjustments made in 10 and 15-inch sizes with openings ¼ to 1 inch and ½ to 2¼ inches, respectively. The company also makes the Uwanta Nut or Monkey Wrench with the same quick adjusting mechanism. Allerton-Clarke Company markets the Wrenches in New England, Middle and Southern States and portions of Canada.

THE RICHARDS & CONOVER HARDWARE COMPANY, Kansas City, Mo., has made arrangements for a store building and warehouse at Oklahoma City, both of which are on a railroad switch. A stock of Hardware suitable for the country tributary to Oklahoma City will be put in as soon as possible.

Nebraska Retail Hardware Association.

(*By Telegraph.*)

THE city of Lincoln greeted the fifth annual convention of the Nebraska Retail Hardware Association with a blinding snow storm. Notwithstanding this obstacle, the opening session at 2 p. m. Tuesday, February 13, was attended by about 150 members and a number of supply men. Exhibitors were requested to lock their exhibit rooms during the convention session, and the camp followers and travelling salesmen were invited to attend the sessions and take part in the discussions.

The Session was Opened

by an invocation delivered by the Rev. H. C. Swearingen, pastor of the First Presbyterian Church of Lincoln, followed by a happy address of welcome by F. W. Brown, Mayor of Lincoln.

Nathan Roberts, president of the Dunning Hardware Company, Omaha, replied to the Mayor's address of welcome in part, as follows:

We have left musty ledgers to bask in the sunshine of genial good fellowship. We have cut loose from our narrow confines to come in touch with broader minds than our own. If our burdens are heavier than we can bear we are here to share them with each other, and if there are any among us so narrow and stunted as to see nothing good beyond their own limited sphere of vision, pray take the next train home to your graveyard. The association can do nothing for you, but I do not believe that there are any such here. I believe we are one great family, seeking the greatest good to the greatest number, and all ready and willing to offer self on the altar of sacrifice in this our common cause—the betterment of the conditions of the Nebraska Hardware merchants.

Presidential Address and Report.

President Max Uhlig of Holdredge made an earnest and eloquent annual address, which was loudly cheered by the members. The report of Secretary J. Frank Barr of Lincoln showed a great increase of membership and told of many instances in which the association, through its officers, has been able to render valuable service to its members. The report of Treasurer H. J. Hall of Lincoln showed the finances of the association to be in a flourishing condition.

Convention Committees.

The following standing convention committees were announced by the president:

FINANCES.—J. H. McGrath, Hastings; Victor Fried, Oakland; Frank Hacker, Friend.

CONSTITUTION AND BY-LAWS.—J. W. Armstrong, Auburn; J. F. Hanlin, Holdredge; L. Pattingale, Omaha.

RESOLUTIONS.—Ernest Hoppe, Lincoln; August Lubeley, Harlington; Roy Bodinson, Kearney.

PRESS.—H. Vieth, Lincoln; A. E. Small, Crete; M. Hussie, Omaha.

LEGISLATION.—F. J. Hoerger, Sutton; Alexander Meyer, Falls City; Frank E. Lahr, Lincoln.

NOMINATIONS.—J. C. Cornell, Ord; A. G. Hunt, Campbell; C. K. Lawson, Hastings.

F. C. Harrington, Pawnee City, was appointed sergeant-at-arms.

Charles W. Asbury's Address.

Charles W. Asbury of the Enterprise Mfg. Company, Philadelphia, and vice-president of the American Hardware Manufacturers' Association, was introduced as a man who had come 1800 miles for the purpose of bringing a message of good fellowship from the manufacturers of Hardware. Mr. Asbury said, in part:

I am here to bring fraternal greetings from an association of 300 prominent manufacturers of hardware. It is the desire of the manufacturers as a class to do everything possible for the protection of the retail merchant. We fully appreciate the importance of the jobber in the distribution of goods, and our relations with jobbers are most cordial, but we realize that you, the retail merchants, are of the first importance because you are the ones who reach the consumer, and the consumer is the one upon whom we all depend.

The strongest evidence of the better time coming is the great growth of the various retail Hardware associations. The same is true of the associations of the jobbers and the manufacturers. It is quite proper that each of these branches of the Hardware business should discuss its own problems from its own standpoint, but after all their interests are almost identical or are at least parallel. It is unfortunate that any spirit of enmity should have been engendered in a desire to place the blame for known evils. The question should rather be how best to remedy the trouble. I look for the day when the three interests, manufacturing, jobbing and retailing, shall be brought together in harmony, when a spirit of frankness and fair dealing will prevail and when this time comes we shall have created a power that will be great enough to check such evils as now confront the business.

National Delegate's Report.

H. J. Hall, the treasurer, made a report as a delegate to the National Convention held at Minneapolis last March. He told of the increase in membership of the National Association and outlined the many ways in which the national body was carrying on the work of improving the status of the Hardware merchant. The garnishment laws of Michigan and Minnesota were commended and the members of Nebraska Association urged to use their best efforts to secure the passage of similar legislation.

H. McGrath's Paper.

H. McGrath of Hastings read a paper on "Hardware Stores, Past, Present and Future." Much stress was laid on the importance of modern shelving and fixtures. In the discussion which followed various members spoke of profitable returns from the proper display of goods, the selling value of tagging or marking goods in large, plain figures and the importance of making the Hardware store as clean and tidy as a dress goods store and equally inviting to women customers.

Mr. McGrath had taken the stand in his paper that Stove manufacturers and jobbers were asking excessive prices on Stoves, Ranges and Heaters, and that in so doing they were strengthening the hands of the mail order houses. This led to a vigorous discussion of the mail order Stove competition, and the solution of the problem that met with the most hearty commendation was that adopted by S. R. Miles of Mason City, Iowa, who sold a large number of good Stoves by displaying in his store a cheap mail order house Stove that had been in use two years. The silent eloquence of its burned out sheets and warped plates and castings was an unanswerable argument in favor of good goods.

Part in this discussion was taken by Edward Johnson of Park, Frank Hacker of Friend, F. C. Harrington, Pawnee City; Kimmel Barnes, David City; P. Waldorf, Western; M. D. Hussie, Omaha; R. G. Hall, Fairmont; National President Bogardus and others.

Papers by Messrs. Hunt and Meyer.

A. G. Hunt of Campbell read a valuable paper on "Best Methods of Getting All Hardwaremen Into the Association." Mr. Hunt urged as a necessary first step in increasing the membership a basis of friendly intercourse and mutual confidence between each member and his local competitors. He also decried price cutting as unbusinesslike and suicidal, and recommended the formation of local associations in towns or neighborhoods containing a number of Hardware merchants.

Alexander Meyer, Falls City, delivered an address on "Our Competitor, Why We Should Be on Friendly Terms with Him."

These two papers were followed by a spirited discussion, which took the form of an experience meeting. The fact developed that it was not always easy to establish relations of mutual forbearance with competitors, but that excellent results always followed the success of such attempts. In Nebraska, according to the testimony of the members, some of the most annoying competition comes from lumber dealers who apparently make a practice of selling Builders' Hardware at cost, as a means of securing orders for lumber.

An effective remedy used by some members was to order a carload of lumber and to retaliate in kind. Mutual agreements not to engage in price cutting usually followed such a flank movement.

Going After Business.

A paper on "Advertising a Store in a Country Town" was read by J. C. McPherson of Haigler and another on "Pushing the Business" by P. A. Krause of Albion. The discussion that followed was mainly devoted to an exchange of ideas on effective methods of competing with mail order houses by vigorous use of printers' ink, as well as by personal canvass.

One of the most successful campaigns of this kind described in the discussion was by Ray W. Weaverling of Peru, who used large display advertisements, in which he quoted prices in parallel column, comparing his selling price with those of the catalogue houses, naming catalogue number and page.

The evening session was executive, consisting of a stereopticon lecture by ex-President Miles of the Iowa Association. This lecture was devoted principally to the two live topics of catalogue house competition and Hardware store displays. The women of the party were entertained at the opera as guests of the local Reception Committee.

Colorado Retail Hardware Association.

THE Colorado Retail Hardware Association held its fourth annual convention at the Adams in Denver, on Wednesday and Thursday, February 7 and 8, and the large attendance, not only of members, but manufacturers and jobbers as well, reflected the keen interest manifested in the work of this young, but growing and energetic organization. During the year the membership list was

increased to 175, and the attendance of many retail Hardware merchants not affiliated with the association, but to whom invitations had been extended, resulted in the enrollment of 15 new members.

This two-day session was replete with addresses on subjects of vital importance to the retail merchants and the discussions covered a wide scope and were productive of much practical information. The parcels post bill after considerable discussion was made the subject of a condemnatory resolution, copies of which will of course be sent to the national legislators of the State. To further accentuate the sense of the convention every member pledged himself to write a personal letter to his district representative in Congress.

The loyalty of the association was pledged to manufacturers and jobbers who keep their goods out of the hands of catalogue houses and it was decided always to give them preference when purchasing. The exhibits of manufacturers and jobbers were more numerous and elaborate than heretofore and were suitably displayed at the convention headquarters.

At the opening session President A. B. Meservey read a letter from the Colorado and Wyoming Lumber Dealers' Association requesting that a legislative committee of three be appointed to act with similar committees of other trade organizations to secure just treatment from the railroads. This was referred to the Committee on Resolutions and was favorably acted upon at a later session.

After deciding to provide a question box for future meetings, the Thursday morning session was almost entirely given over to a discussion of the catalogue house by S. Norvell of St. Louis and ex-Gov. Alva Adams of Pueblo. W. A. Gladden of Minneapolis, a manufacturer, also spoke briefly, and said that he had always taken the position that the retail merchant and not the catalogue house, should be the ultimate distributer to the consumer.

Before going into executive session Thursday afternoon, B. M. Carr of the National Home Trade League spoke at length on catalogue house trade. After a discussion of this very interesting and able address the convention went into executive session.

The report of the Committee on Revision of By-laws, which was adopted, eliminated the word "dealers" from the name of the organization, and it will hereafter be known as the Colorado Retail Hardware Association.

The members of the Auditing Committee were increased from two to three and the by-laws were further changed, giving the Executive Committee full power to name date and place of meeting. This section previously provided that the meeting be held in February.

Article 2, relating to membership, which has heretofore limited it to any person, firm or corporation in Colorado, has been changed to take in the bordering towns in Wyoming, Utah and New Mexico.

The visitors were lavishly entertained, attending a theater party on Wednesday evening through the courtesy of George Tritch of the George Tritch Hardware Company of Denver, and on Thursday evening S. Norvell of the Norvell-Shapleigh Hardware Company of St. Louis was the host at an elaborate and very enjoyable banquet given at the Brown Palace Hotel.

New Officers.

The election of officers resulted as follows:

PRESIDENT, M. S. Whiteley, Boulder.
VICE-PRESIDENT, John Spriestersbach, Alamosa.
SECRETARY-TREASURER, Adolph Unfug, Walsenburg.
EXECUTIVE COMMITTEE.—George Wilson, Florence; Adolph Unfug, Walsenburg.
DELEGATE TO MEETING OF NATIONAL ASSOCIATION.—Adolph Unfug, Walsenburg.

Convention Committees.

The following committees were appointed by the president:

RESOLUTIONS.—A. L. Branson, Trinidad; George Wilson, Florence; J. T. Clough, Colorado Springs; M. S. Whiteley, Boulder; George Mayer, Denver.
AUDITING.—O. W. Sewell, Idaho Springs; William Jamieson, Trinidad; A. A. Ferguson, Loveland.
NOMINATING.—T. M. Harding, Cañon City; O. A. Cramer, Monte Vista; C. C. Huddleston, Lamar.
REVISION OF BY-LAWS.—John Spriestersbach, Alamosa; W. D. Carroll, Antonito; F. C. Moys, Boulder.
GRIEVANCE.—Peter Henderson, Fort Collins; Amos Carroll, Ray; J. P. Barnes, Colorado Springs.
LEGISLATIVE.—A. L. Branson, Trinidad; F. C. Moys, Boulder; George Mayer, Denver.
RAILROAD.—C. W. Kittering, Denver; W. M. Jameison, Trinidad; A. Unfug, Walsenburg.

W. K. Hurd was appointed sergeant-at-arms.

Resolutions.

The following resolutions were adopted by the convention:

Whereas, We believe every member of this association is fully aware of the disastrous effects to the great army of retail mer-

M. S. WHITELEY.

chants doing business in the smaller cities and the towns throughout the entire country that would follow the passage of the parcels post bill; we reaffirm our opposition to any such proposed law as set forth in the resolutions adopted by this association at its last annual convention; and

Resolved, That our secretary be instructed to send a copy of this resolution to each Senator and Representative representing the State of Colorado at Washington.

Whereas, In the past year some of the manufacturers and jobbers of Hardware have shown that they are desirous of protecting the retailers by keeping their goods out of the hands of the catalogue houses; therefore

Resolved, That we pledge our loyalty to said manufacturers and jobbers, and that we give their goods the preference in every way possible when in the market for goods in their line.

Resolved, That a legislative committee be appointed by the president, to co-operate with like committees from the lumber and other retail associations in guarding against injurious and promoting just legislation favorable to the retail merchants within the territory of this association.

Resolved, That the thanks of this association be extended to the railroads for the favorable rates granted our members to attend this convention; to the Adams Hotel for reduced rates and courtesies extended our members in many ways, and to the Denver papers for reporting our general proceedings.

Resolved, That the thanks of this association are also due the management of *The Iron Age* for sending their Mr. Klingenfeldt from Chicago to report the proceedings of this convention. This reliable Hardware magazine has never failed to be represented at the conventions of this association, a fact duly appreciated by the membership of this association.

A. B. MESERVEY.

ADOLPH UNFUG.

Resolved, That the thanks of this association be extended to George Tritch of Denver for the theater party, and to S. Norvell of St. Louis for the elegant banquet to which all were invited we desire to express our great appreciation; and to the Hardware jobbers, both from the East and in Denver and Pueblo and their representatives, the traveling men, and the Denver dealers in general, who have helped to make this convention a success by their presence and expressions of good will, the thanks of this association are due.

Hardware Insurance.

F. C. Moys of Boulder addressed the convention on the subject of "Hardware Mutual Insurance." He spoke of the organization of the insurance company, the assets and business of the company, taking up the question of rates and showing the difference in the cost of insurance between that of the association and the old line companies. He stated that the National Company had insurance in effect in December last, amounting to $1,126,000.

Presidential Address.

We give the following extracts from the annual address of the president of the association, Albert B. Meservey of Colorado Springs:

It means much when a busy merchant leaves his business to others and goes to these annual gatherings, and I am sure that every one that has attended these meetings has been benefited in a great many ways. We get acquainted with the different merchants of the State, and we are enabled to exchange views as to the best methods of doing business. I for one always look forward to these annual meetings with a great deal of pleasure and think the time spent at these conventions is well spent, for there are always points brought out that enable us to improve upon our ways of doing business.

WHAT WE WANT IN THIS STATE

is to get every retail Hardware dealer into this association. We have a great many, but we want them all, and the only way to get them is to invite and show them that there are benefits to be derived by joining an association of this character.

The past year has been a good one for most of us, the trouble in the mining camps has been settled and most of the mines in our State have had the best year in their existence. The beet sugar industry, our coal mines, our sheep raisers, and our fruit districts have had a good year, which means that the hardware dealer is bound to be benefited.

GRIEVANCES.

Our secretary will, no doubt, in his report give us an outline of what has been accomplished by this association in the past year. We have had our grievances as usual, but they have all been settled to the advantage of the Hardware dealer. Some of them, such as the selling of ammunition to a large wholesale grocery house in Denver by the cartridge companies, have been discontinued, simply because we, as an association, comprised of the leading retail Hardware dealers of the State, requested them to quit selling a house that, in a very short time, would have every "corner grocery" in the State selling Cartridges. Do you think if there had been no Hardware Dealers' Association, the manufacturer would have taken the agency for these goods away from this house?

It was also largely through the efforts of this association that Woods Senate Bill No. 176 was passed and became effective on July 7, of last year, a copy of which was sent to each of our members.

WE HAVE AT LAST SUCCEEDED

in getting most of our prominent wholesale houses to refuse to sell catalogue houses, but as yet we have found no way in which to reach the manufacturer, and they still get what goods they want. Would it not be well for us, when we find any of our customers sending to those houses for goods, to have a quiet talk with them and tell them we will meet any prices quoted by such houses, adding the freight, and in that way get them to leave the money at home instead of sending it out of town. In our city we have a merchants' association which has done a great deal toward getting people to trade at home. During the holidays they had a lot of cards printed—"Trade at home" printed upon them. These cards were put on all the street cars. They also had slips printed—"Patronize home stores"—and all of the merchants were instructed to put these slips in their letters whenever they had occasion to write to parties living in the city.

In this way we are striving to educate our people to the advantage of trading at home and getting them out of the habit of sending away for goods which in many instances they pay more money for after they have paid the express charges than they would have paid our home merchants for the same article.

Secretary's Report.

The report of the secretary, Davis Barkley of Fort Collins, described the work of the association during the past year. We make the following extracts from it:

So far as I am able to learn, the majority of the jobbers doing business in this territory are confining their business to the legitimate hardware channels. Some of them, however, are still selling to the Fair and Racket Stores.

It is my opinion that our constitution and by-laws need quite a little adjusting, and would suggest to the committee on revision of by-laws to give this subject very careful consideration, particularly that section which refers to the time and place of meeting. I would suggest that this section be made to read: that the annual meeting shall be held either in the month of January or February as the Executive Committee may select. My reasons for this suggestion are that quite a number of our members are also members of the Lumber Dealers' Association, and it would be much more convenient for both associations to meet at the same time.

DAVIS BARKLEY.

S. NORVELL.

CANVASSING THE STATE.

I would recommend that the association send their new secretary over the State some time during the year in the interest of the association; at least send him to the principal towns to solicit new members and collect dues from those who have neglected to pay. No doubt our membership could be greatly increased by doing this. We need the new members and they need us. I would also recommend that he be sent to the National Association, which meets in Chicago in March. He will no doubt learn a great deal about association matters, and how to carry out his official duties.

Members should remember their privilege of getting insurance with the National Hardware Mutual Fire Insurance Company. Protect yourselves with a cheaper rate of insurance and help build up this worthy institution.

Hardware Reminiscences.

An interesting address was that of W. S. Wright of the Wright & Wilhelmy Company, Omaha, Neb., and president of the National Hardware Association, entitled "Hardware Reminiscences." After a reference to Hardware business conditions nearly 40 years ago, Mr. Wright spoke, in part, as follows:

But the main thing in which you gentlemen are interested and about which I would like to speak to you is as to how at the present time we can make the greatest success of the Hardware business. That is a practical question, and we are here, I think, to discuss practical questions, to get practical ideas and endeavor to get out of this meeting some results that will benefit our business and make it not only larger but more profitable. Personally, I was thinking of that matter last night, and I don't know of any way in which we can benefit our business more than to get next to our competitor. My opinion is that

YOUR COMPETITOR IS THE BEST ASSET

that you have. If you cultivate him he will pay you a better margin of profit than the best customer you have on your books. The way to cultivate him is to get him to join your association, and that is the first feature of the proposition. Bring him down here; let him meet a bright, capable, intelligent body of business men and get ideas in regard to developing business and making more profit out

A. B. CORBIN.

FRANK A. ELLIS, Jr.

of his business than he would otherwise do. If you can educate your competitor to the point where he is willing to make money out of his business, the chances are that your chances are very much more favorable than otherwise.

CATALOGUE HOUSE METHODS.

I did not intend to say anything about the catalogue house proposition, but there is one feature that I cannot resist speaking of and that is this, as a practical application to our own business: Those catalogue houses, I understand, from the very nature of their business, require experts in that line of work, and they pay them large salaries. They are thoroughly capable and they are advertising men of high class. All that it costs you gentlemen to get all that information is a postal card and you have got it all before you. It is valuable for your use and if you do not use it I do not know whose fault it is except yours.

I believe that a newspaper ad. is a good thing. I believe that personal advertising is a better thing. I believe it will pay you to go to work and get a mailing list. It will cost a little, but suppose you put $10 or more in it and get a complete list of every farmer, every user of your goods in that vicinity. You can have that list made up on a hektograph and have 100 or 150 copies struck off. On that list you can make a memorandum of every man in your vicinity who is a catalogue house man. You can every month, in an hour or two hours, paste on the envelope or piece of paper the address of that man and send him some advertising matter at a nominal cost.

GO TO WORK AND WRITE HIM

a letter and you can have one of those addressing concerns make 1000 of those envelopes and address them at a cost of $1.25, and you can write a letter to them on the hektograph at a cost of $1.50 or $2, and in the course of two hours mail to your customers the letter telling them what you want to sell, why you want to sell it to them and why it is better to buy the goods from you than from a catalogue house.

You can take four or five different lines and you can print a little circular, or a folder, that will increase the business of your town to an extent that you do not realize is possible, at an expense so small that you do not really know how small it is.

Those are ideas that you can get and develop from the advertising that has been done by these catalogue houses. I recognize the fact that it means work, but there is not a gentleman here before me who has made a success of his business but has worked for it, and he has worked hard.

THE MOST SUCCESSFUL MEN

in the country to-day are not the men who have been born with a silver spoon in their mouths, and who have had their affairs taken care of by somebody else; they have gone out and worked for it. They fought for it, and when they have won it they have appreciated it, and the greatest strength to-day that any of you have in your business is the fact that you have worked to the extent of your ability to build that business up, and in that lies your greatest strength.

IT IS A GREAT DEAL OF PLEASURE

to me to convey to you the glad hand from the National Hardware Association. We feel that we are vitally interested in this work, and we are not only glad but willing to do anything we can to forward the interests of the retail trade. I am willing to admit we are like the rest of you—we are absolutely selfish, because the prosperity of the retail trade means the prosperity of the jobber, and the prosperity of the jobber means the success of the manufacturer. If we pull in that line earnestly on this proposition there is not any question about the results.

FARMERS DO NOT UNDERSTAND.

There is another thing that I think should be appreciated, and that is that in very many cases the farmer does not understand the situation. He says: "You are selfish in the matter. All you want is to have me quit buying from catalogue houses so that you can hold me up." On that account anything that will tend to educate the farmer to the advantage of buying in his home market, from his home dealer, is a very material benefit.

Association Benefits.

Ex-President A. L. Branson of Trinidad read a paper on the "Benefits Derived from the Colorado Retail Hardware Association," in part, as follows:

By membership in the association my firm was enabled to save $11.75 on a $2,000 fire insurance policy last year, a net profit of $5.75, after paying our annual dues of $6. Not very much, it is true, yet it represents the profit on several kegs of horseshoes to our blacksmith at a price that saves the business to us as against our Denver or St. Louis jobbing friends.

Again, through the medium of this association and a list of its members on our desks, some of us

HAVE TRACED DELINQUENT CUSTOMERS

to other communities in the territory of this association, and by the aid of a brother dealer, collected a balance long past due us. Others of us, through the acquaintance this association has made possible, have found it mutually profitable to exchange a part of an overstock or dispose of some accumulated stock not salable in some sections of the State, but staple in the territory of some brother dealer. By exchanging confidences more fully at these conventions we believe we might more frequently help each other out by exchanges of this kind that would be mutually profitable.

POINTERS.

Again, have not we all who have attended these conventions since our organization gotten pointers as to the purchase of goods that have made us money? And have we not also gotten information from these conventions that has made us money in the management of our business? It is impossible for any intelligent Hardware dealer to sit through the sessions of these conventions from year to year and not absorb ideas that if put into effect will make him more profit. It occurs to me that perhaps

THE MOST IMPORTANT ACHIEVEMENT

we can credit to our association, so far as our individual members are concerned, was the cancellation of two ammunition contracts with one of the largest grocer jobbers in the State. Our members are all familiar with these two transactions, and we are all grateful to the Peters Cartridge Company and the Ammunition Manufacturers' Association for their recognition of the rights of our members as Hardware dealers in the canceling of these contracts.

NATIONAL ASSOCIATION.

If there were not another thing to the credit of our association than the fact that our members through this organization are also members of the National Retail Hardware Association, all the labor and expense of our association would be more than justified. The failure of the catalogue houses and their allied friends to secure the passage of a pernicious parcels post bill that would mean almost the annihilation of the retail dealers in all lines in the smaller town and cities is due primarily, I believe, more to the efforts of the National Retail Hardware Association than to any other organization. It was this association that pointed out to the jobbers and manufacturers the dire results if such a measure were passed, and now we are receiving the hearty co-operation of both the Hardware Jobbers' Association and the Manufacturers' Association in our efforts to prevent any such calamitous legislation.

These are some of the cold-blooded, practical benefits this association has passed up to its members, but are they any more valuable than

THE IDEAS WE ABSORB FROM THE CONTACT

with brother dealers and our good friends, the jobbers, and their able representatives at these conventions? We get warmed up, get enthused, buoyed up, as it were, and go home feeling new, with no malice in our hearts for even our competitor, although we know he is the meanest man in Colorado, outside of perhaps a few in Cañon City. The acquaintances these conventions have furnished the opportunity of making and the lasting friendships that have resulted from such acquaintance are worth more to me than all the financial benefits we have derived. These acquaintances we will cherish more and more as the years go by. Nor are these acquaintances limited alone to our coworkers, the retail Hardware dealers.

Through our association and its conventions we are permitted to enjoy a kind of social reunion of

OUR STAUNCH FRIENDS,

the traveling men. They are the "salt of the earth," and deserve more orders than we can ever give them. We are also brought face to face at these conventions, often for the first time, with the heads of the big jobbing concerns from whom we have brought goods for years. This does us good and does not hurt the jobber. It tends to make our future business relations with these houses more pleasant. It brings us to a better understanding of each other and cements a good feeling. It also gives our good friend, the jobber, who does not sell to catalogue houses, and always protects the legitimate retail Hardware dealer,

A CHANCE TO EXPLAIN

that little shipment we saw at the depot the other day to our town blacksmith; also one to a lumber yard and two to second-hand stores, all of our town, all identified by the shipping tag with the big red letters, "We do not sell catalogue houses." But let me say more seriously that I believe our association has been not only profitable to the retail Hardware dealer, but we trust it has proved so to the Hardware jobbers. The object of this association is not only to protect its members from trade abuses, no matter from what source they come, but also to elevate the business, by encouraging integrity in all our transactions with jobbers, competitors and customers. We are striving to reach a higher plane, better business methods, and in this we feel sure of the continued co-operation of the legitimate Hardware jobbers of the country.

S. Norvell's Address.

S. Norvell, of the Norvell-Shapleigh Hardware Company, St. Louis, and chairman of the Wholesale and Retail Joint Committee, delivered a very entertaining address on catalogue house competition. Mr. Norvell had not intended to speak on this subject and did so at the request of President Meservey, in the unavoidable absence of another member of the Joint Committee who had been delegated to discuss it. Mr. Norvell in an interesting way narrated the facts leading up to and culminating in his sensational letter to *The Iron Age*, which started the organized agitation for the adoption of methods for combating this form of competition. He defended the campaign of publicity, which has been followed in dealing with the matter, and said that the policy to be pursued was for retailers, not by organizations but individually, to make up their minds not to buy goods that are carried by catalogue houses.

Address of G. W. Simmons.

A very interesting address was made by G. W. Simmons of the Simmons Hardware Company, St. Louis, in which after narrating a number of anecdotes he touched upon trade questions and especially the efforts of his company to do everything in their power to aid the retail Hardware merchants in the carrying on of their business. He explained that one of his chief duties as traffic manager of his company is to do everything in his power to improve the freight service and influence the adjustment of freight rates, as one of the most effective means of assisting the Hardware dealer to cope with the difficulties by which he is confronted. With this end in view he will continue to travel throughout the country, meeting railroad officials and using the weight of his company's influence to better the conditions in each locality, with the idea of enabling retail merchants to meet competition successfully. After alluding to various means in which the Simmons Hardware Company endeavor to co-operate with the retail Hardware merchants and give them as much assistance as possible, Mr. Simmons concluded as follows:

We of the younger generation are sticking right to that policy which has brought us success during the last half century; the longer we live and the more we study the situation, the less we are inclined to get away from it. We try to keep up with the times and develop with conditions, but that fundamental principle is the basis of every change and every move we make. I come from a house thoroughly grounded in the belief that in these days of intelligent commercialism the trade is most discriminating and will bestow their favors where there is absolutely the most merit, and that merit consists of the best assortment of good sellers from which to make your selection, prompt and complete execution of orders, low prices, and a salesman who will not only know his business thoroughly and be a fair man, giving each and every one of his customers an absolutely square deal, but who also lives up to one of the favorite mottoes of the founder of our house—that "a good salesman is one who helps his customers to prosper." It is like the motto, also originated by E. C. Simmons, which has become one of our valuable assets and registered trademarks: "The recollection of quality remains long after the price is forgotten."

Manufacturers and Jobbers Present.

The following manufacturers and jobbers were personally represented, the exhibits being more numerous than ever before:

E. C. ATKINS & Co., Indianapolis, Ind. Full line of Saws. Represented by G. W. Gladding and S. M. Perrigo. Souvenir, memorandum book.

NORVELL-SHAPLEIGH HARDWARE COMPANY, St. Louis. Diamond Edge Tools. Represented by S. Norvell, R. W. Wise and J. S. Wise.

ESTATE OF P. D. BECKWITH, Dowagiac, Mich. Round Oak Stoves and Ranges. Represented by C. E. Burton. Souvenir, imitation linen book, entitled "Amos Hudson's Motto."

CATTARAUGUS CUTLERY COMPANY, Little Valley, N. Y. Cutlery, Razors and Shears. Represented by W. A. Dunn and E. Dunn.

MALLEABLE IRON RANGE COMPANY, Beaver Dam, Wis. Stoves and Ranges. Souvenir, metal ash tray.

T. M. JONES & SONS, Kansas City, Mo. China and Glassware. Represented by L. Dunnett.

NELSON & MORRISON, Boulder, Col. Hose Coupling. Represented by M. Morrison.

HIBBARD, SPENCER, BARTLETT & Co., Chicago. Represented by S. C. Hall, J. W. Quarroe and W. Wharton.

WYETH HARDWARE & MFG. COMPANY, St. Joseph, Mo. Represented by W. H. Curtain and Joe Rohrer.

MARLIN FIRE ARMS COMPANY, New Haven, Conn. Represented by Charles Porter.

WRIGHT & WILHELMY COMPANY, Omaha, Neb. Represented by W. S. Wright, I. G. Bly and H. F. Stewart.

SIMMONS HARDWARE COMPANY, St. Louis, Mo. Represented by G. W. Simmons, S. Carter and J. R. Hudson.

LEE-GLASS-ANDREESEN COMPANY, Omaha, Neb. Represented by C. L. Buck and Burt C. Fields.

E. I. DUPONT COMPANY, Wilmington, Del. Ed. Whitman in charge of exhibit.

AMERICAN POWDER MILLS, Chicago. Represented by George T. Kearns.

A. G. MCAUSLAND & Co., Denver. Represented by A. G. McAusland.

GEORGE TRITCH HARDWARE COMPANY, Denver. Represented by George Tritch and Fred Tritch.

JOHN M. KILLEN & Co., Pueblo, Col. Represented by John M. Killen.

GEORGE HOLMES HARDWARE COMPANY, Pueblo, Col. Represented by George Holmes and Alva Adams.

WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn. Represented by M. J. Hildreth, New York.

A. J. LINDEMANN & HOVERSON COMPANY, Milwaukee, Wis.; MICHIGAN STOVE COMPANY, Detroit, and the ILLINOIS REFRIGERATOR COMPANY, Morrison, Ill. Represented by Fred C. Voss.

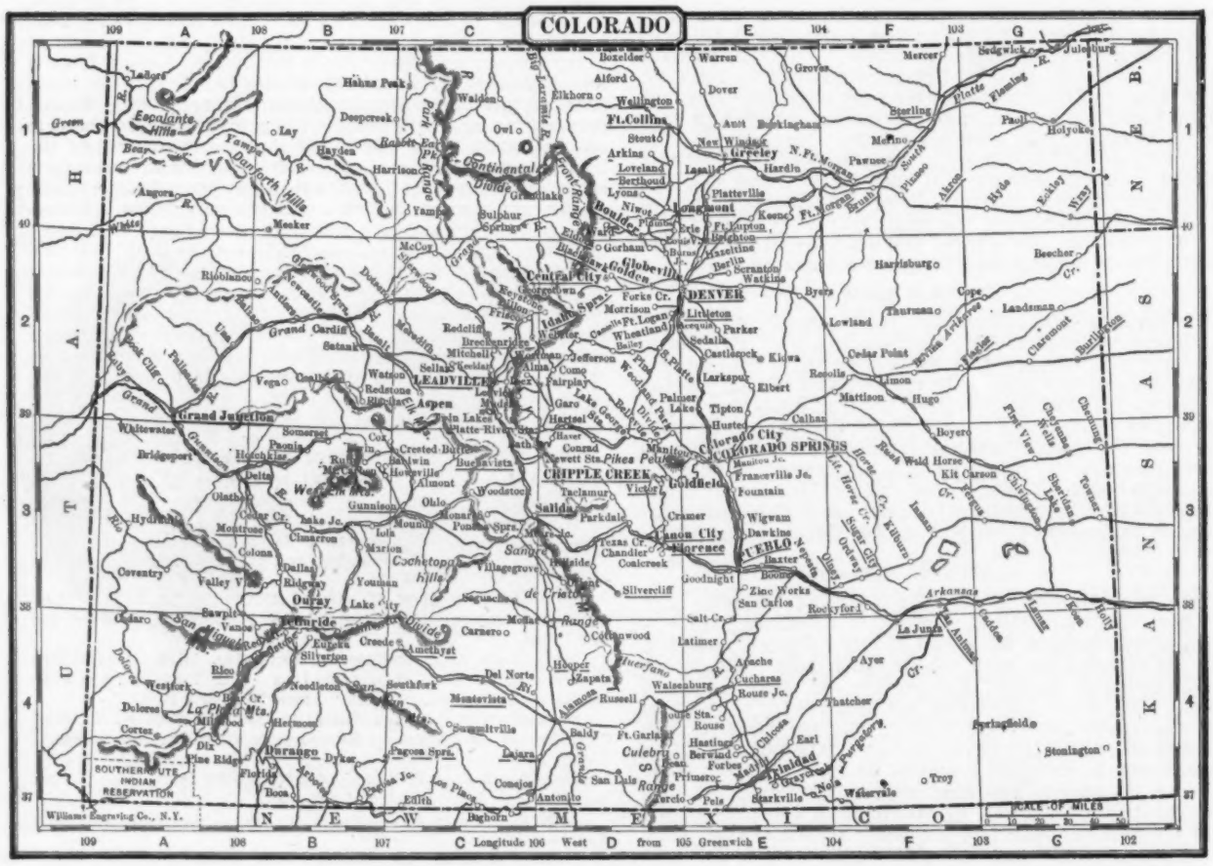
SAVAGE ARMS COMPANY, Utica, N. Y. Represented by F. P. Kelley.

COLORADO ASSOCIATION MAP.

The membership of the Colorado Association is now nearly 200, a good percentage of the Hardware merchants of the State. A healthy growth is reported for the past year. During the present year it is not unlikely that a personal effort on the part of the secretary to canvass the State for members will be made. The convention just held at Denver was an enthusiastic one and will doubtless have a good effect in promoting the welfare of the association.

It will be observed from an inspection of the map that while a good many towns (those underscored) are represented in the membership, there is also opportunity for missionary work, especially in the northwestern part of the State.

Cities of 10,000 and over are in capitals, as, for instance, DENVER. Places with a population of 2000 to 10,000 are in heavy face lower case, while those having less than 2000 inhabitants are in lower case Roman.


COLORADO
DENVER
COLORADO SPRINGS
PUEBLO
LEADVILLE
CRIPPLE CREEK
Ft.Collins
Longmont
Boulder
Central City
Golden
Aspen
Grand Junction
Canon City
Florence
Salida
Ouray
Durango
Trinidad
Lamar
La Junta
Sterling
Julesburg
Holyoke
Burlington
Limon
Hugo
Springfield
Stonington
Troy
Walsenburg
Alamosa
Monte Vista
Del Norte
Creede
Silverton
Telluride
Montrose
Delta
Gunnison
Crested Butte
Glenwood Springs
Rifle
Meeker
Craig
Steamboat Springs
Hahns Peak
Rabbit Ears Pass
Rocky Mtn. Nat. Park
Continental Divide
Front Range
Sangre de Cristo Range
Mosca Pass
Cochetopa Hills
Escalante Hills
Book Cliffs
Grand Mesa
Uncompahgre Plateau
Elk Mts.
La Plata Mts.
San Juan Mts.
Sawatch Range
Park Range
Laramie Mts.
Raton Mesa
Spanish Peaks
Pikes Peak
Arkansas R.
Platte R.
Grand R.
Gunnison R.
Colorado R.
Rio Grande
San Juan R.
Dolores R.
Yampa R.
White R.
Green R.
Republican R.
Smoky Hill R.
Big Sandy Cr.
Horse Cr.
Kit Carson
Cheyenne Wells
Eads
Lamar
Las Animas
Holly
Granada
Lamar
Wiley
Fowler
Manzanola
Rocky Ford
Swink
Ordway
Sugar City
Crowley
Olney
Boone
Hasty
Kim
Model
Branson
Jansen
Aguilar
Cokedale
Starkville
Weurfano
Ludlow
Delagua
Forbes
Berwind
Tobasco
Primero
Segundo
Rouse
Rouse Jc.
Cucharas
Apache
Ayer
Thatcher
Chicosa
Earl
Model
Timpas
Purgatoire
Las Animas
Kiowa
Elbert
Parker
Castle Rock
Larkspur
Palmer Lake
Monument
Colorado City
Manitou
Fountain
Security
Widefield
Franceville Jc.
Wigwam
Dawkins
Zinc Works
San Carlos
Rockyford
Goodnight
Silver Cliff
Texas Cr.
Chandler
Coalcreek
Parkdale
Cramer
Victor
Cripple Creek
Altman
Goldfield
Independence
Deadwood
Gillett
Victoria
Cameron
Iola
Mount Pleasant
Monarch
Sargents
Maysville
Poncha Springs
Villagegrove
Coaldale
Howard
Salida
Hecla Jc.
Parkdale
Texas Cr.
Coaldale
Wellington
Fort Collins
Loveland
Berthoud
Longmont
Niwot
Erie
Lafayette
Louisville
Superior
Boulder
Gold Hill
Sunset
Ward
Nederland
Eldora
Tungsten
Gilpin
Central City
Black Hawk
Idaho Springs
Georgetown
Silver Plume
Empire
Clear Creek
Golden
Arvada
Wheat Ridge
Denver
Littleton
Englewood
Sedalia
Castle Rock
Parker
Elizabeth
Kiowa
Elbert
Franktown
Watkins
Scranton
Byers
Deer Trail
Agate
Cope
Harrisburg
Beecher Cr.
Landsman
Lowland
Taurman
Cedar Point
Limon
Rush Cr.
Arroyo
Eagle
Claremont
Burlington
Mattison
Hugo
Boyero
Genoa
Arriba
Flagler
Seibert
Stratton
Vona
Burlington
Wild Horse
Kit Carson
Cheyenne Wells
Cheyenne Cr.
Big Sandy Cr.
Horse Cr.
Rush Cr.
Arroyo
Eagle
Claremont
Burlington
Seibert
Stratton
Vona
Flagler
Genoa
Arriba
Hugo
Limon
Boyero
Mattison
Calhan
Elbert
Kiowa

Pennsylvania Retail Hardware Dealers' Association.

ANIMATED discussion of subjects of practical interest to Hardware merchants marked the fifth annual convention of the Pennsylvania Retail Hardware Dealers' Association. The convention met in the beautiful and enterprising city of Williamsport, where the local members were assisted in receiving and entertaining their guests by several other prominent citizens. A formal welcome to the city was extended by Mayor S. T. Foresman at the opening session, and an address was also

delivered by H. E. Herman, president of the Williamsport Merchants' Association, who spoke with great favor of trade organization, sketched the history of the local association and reviewed its accomplishments. Williamsport is rapidly assuming importance as a manufacturing center, and several gentlemen identified with local producing interests were noticed among the groups in the hotel parlors. Among these may be mentioned J. W. Maxwell of Sweets Steel Company, Hugh McDonald of the Demorest Mfg. Company and J. M. Young of the Williamsport Iron & Nail Company.

The Park Hotel, which was chosen as the convention headquarters, was exceptionally well adapted to the purpose, being large enough to accommodate all the members present and affording ample space for holding meetings, installation of exhibits and for the banquet.

The Large Attendance

at the various sessions of the association was especially encouraging, the average number present being about 100. A good proportion of this number took an active part in one or more of the discussions, a fact which clearly indicates the general interest in the questions brought up and the practical and helpful nature of their treatment.

High Praise

was due, and was unreservedly accorded to the Committee of Arrangements, consisting of A. W. Lieb, Williamsport; A. H. Kaufman, Lock Haven, and Wm. Mendenhall, Montoursville, for its excellent work and careful attention to all details of accommodation and entertainment, which went so far to make the convention a success. The programme, which was gotten up by this committee with the assistance of Secretary J. E. Digby, McKees Rocks, was a handsome publication, while the banquet *menu* was a model of rich and tasteful printing, bearing on its cover a portrait of President Geo. V. Thompson of Mt. Jewett.

The Banquet

was a very enjoyable affair, being participated in by nearly 200 ladies and gentlemen. In arranging this function the committee had the efficient assistance of J. H. Reed, Williamsport, a representative of the Pittsburgh Stove & Range Company, who gracefully officiated as toastmaster. His happy introductions and witty sallies were highly appreciated. Good music was furnished by an orchestra assisted by local vocalists, while A. F. Victor of the White Lily Washer Company gave an entertaining exhibition of magic. A feature of the banquet was the address of J. M. Young of the Williamsport Iron & Nail Company, who traced the growth of the Cut Nail industry since its period of depression some years ago and discussed various methods of distributing goods from the point of view of a manufacturer. The toasts were as follows: "Our National Association," M. L. Corey; "Our State Association," Geo. V. Thompson; "The Jobbers," T. James Fernley; "Local Merchants' Associations," H. E. Herman; "The Trade Journal," A. H. Chamberlain of *The Iron Age;* "The Manufacturer and Distributer," John M. Young; "The Traveling Salesman," H. W. Shaffer.

President's Address.

The presidential address of George V. Thompson, Mt. Jewett, follows, in part:

I hold that it is the duty of every Hardware merchant to not only become a member of his State Association but to attend its annual meetings. If for no other reason I would say it is necessary for you to do this in order to get away from your labors for a short time and get a too often much needed rest. In years gone by the merchant made two or three annual visits to the city to buy goods, which gave him this needed recreation, but now, with the angels of commerce, the traveling salesmen, chasing each other over the country and playing hide and seek as it were in your store, trying to get at you to sell you goods,

WILLIAM MENDENHALL.

there is no need for you to go to the city to buy; but you do need a rest and change of scenery, and I know of no better way of getting this much needed recreation than by attending your annual Hardware convention. Some one has said that the Hardware merchant is supposed, as it were, to

ABSORB THE STERLING QUALITIES

of the metal which he handles (with the possible exception of brass and *steal*). Consequently, we find him usually a leading citizen in the community in which he lives, working not only for his own interests but for the interests of the entire community. With the changed conditions of trade

SERIOUS QUESTIONS

confront the retail Hardwareman, and in order to make our influence felt we must be united. As one of the signers of the Declaration of Independence said, we must hang together or we will all hang separately, and this seems to express the present conditions of the retail Hardware business. Individually we have little influence with either the manufacturer or jobber, but unitedly we have been able already to enlist a large number of both manufacturers and jobbers in sympathy with our efforts in

COMBATING UNFAIR COMPETITION,

and have succeeded to some extent in establishing our rights with the trade as retailers.

I would suggest as a further means of increasing the membership of our association and enlarging its usefulness that this convention consider the advisability of organizing

A LOCAL ASSOCIATION

in each county, to meet every three months to discuss local conditions and matters of general interest. This would afford an opportunity to instruct the local Hardware merchants in regard to our State and National associations and the benefits to be derived from the insurance features of same and would eventually result in a large increase in our membership. I would suggest that

A. H. KAUFMAN.

J. E. DIGBY.

we also consider the advisability of asking the other State Association to join us in requesting the Jobbers' Association to have its members adopt a

UNIFORM WIDTH OF INVOICE PAPER.

Most of our filing devices will accommodate a billhead 8½ inches wide, but some invoices are narrower and some are so much wider that they have to be folded over on the edges where the figures are, and on account of the poor quality of the paper in many instances the bill is soon worn out. This is one of the small worries of the retail Hardwareman and we think it could be remedied without inconvenience to any one, and we believe if the jobbers' attention were called to this they would cheerfully comply with our request.

I wish here to express our appreciation of the services of the

TRADE PAPERS

in their untiring efforts to assist our organization in sending representatives to our convention and publishing everything of interest to us. The retail Hardware merchant who does not take and read at least one of the trade papers can hardly be an up to date merchant.

I would urge all our members to take advantage of the benefits to be derived from carrying a policy in our Fire Insurance Association. You can carry $3000 and save about 50 per cent.

Membership Nearly 300.

The secretary's report showed the association to have enjoyed a healthy growth during the year. Eighty-nine new members were secured, largely through the efforts of a solicitor whose services were secured by arrangement with the insurance company. The total membership is now 279. Further augmentation is expected as a result of the rule, recently established, that only association members are eligible to insure in the Hardware Mutual. The finances were reported to be in good condition.

Officers for 1906.

A change was made in the method of electing officers by which candidates were nominated and voted on by ballot in convention instead of recommended by a Nominating Committee such as has made up the slate on previous occasions. The following officers were chosen for the ensuing year:

PRESIDENT, Wm. Mendenhall, Montoursville.
VICE-PRESIDENT, A. H. Kaufman, Lock Haven.
SECRETARY-TREASURER, J. E. Digby, McKees Rocks.
MEMBERS OF EXECUTIVE COMMITTEE.—G. V. Thompson, Mt. Jewett; N. D. Cool, Galeton.
REPRESENTATIVES TO THE NATIONAL CONVENTION.—J. M. Selheimer, Lewiston; G. V. Thompson, Mt. Jewett; S. S. Bryan, Titusville; J. E. Digby, McKees Rocks.

Convention Committees.

The following committees were appointed by the president:

PRESS.—A. W. Lieb, L. Wurster, A. H. Chamberlain of *The Iron Age*.
AUDITING.—L. H. Hoover, J. F. Frye, J. F. Howe.
NEXT PLACE OF MEETING.—G. L. Moore, G. W. Hackett, F. W. Prothero.

Permanent Grievance Committee.

After some discussion bringing out the need of such a body, the president was authorized to appoint a permanent Grievance Committee to whom all differences and complaints might be referred by individual members. G. W. Hackett, G. L. Moore and William Mendenhall comprise this committee.

Pittsburgh Next Year.

Considerable unanimity was shown in advocating Pittsburgh for the next place of meeting and the report of the committee recommending that city was unanimously adopted. The association has not met in the western part of the State for some years. It was also suggested that the presence of the convention might have a good effect in correcting conditions unsatisfactory to the retail merchants, which are somewhat aggravated in the Pittsburgh district. The date for the meeting was left open, and it may be decided to hold it at some other season than has been customary in previous years.

Communications

were read from officers of several Hardware associations in other States extending greetings and good wishes to the Pennsylvania organization. Letters were also received from J. M. Selheimer, Lewistown, an ex-president, who was unavoidably prevented from attending the convention, and from J. F. Davis & Sons, Oakland, Md., who are identified with this association. By vote of the convention telegrams were sent to Mr. Selheimer and to R. R. Williams of *The Iron Age* expressing regret for their absence and extending greetings.

Resolutions.

In accordance with the report of its committee, consisting of J. N. Kline, S. S. Bryan and J. E. Bergstresser, the association adopted the following resolutions:

That to the public press of the city of Williamsport a vote of thanks be extended for the fair and impartial as well as the

GEORGE V. THOMPSON.

A. W. LIEB.

public spirited manner in which they have chronicled the proceedings of this convention in their columns.

That we extend to S. T. Foresman, Mayor of Williamsport, our sincere thanks for his cordial greeting, welcoming us to the city and extending to us the freedom thereof.

That to the Committee of Arrangements, consisting of A. W. Lieb, A. H. Kaufman and Wm. Mendenhall, be extended our hearty thanks for the care and forethought in their arduous labors in completing the arrangements for our entertainment. Their work has contributed largely to the success of the meeting.

That to M. L. Corey, secretary of the National Retail Hardware Association, be extended our sincere thanks for his attendance at the meetings and for the very interesting manner in which he discussed the various questions which so interest us as Hardware dealers.

That this association is opposed to the United States Government carrying freight and merchandise to the detriment of the

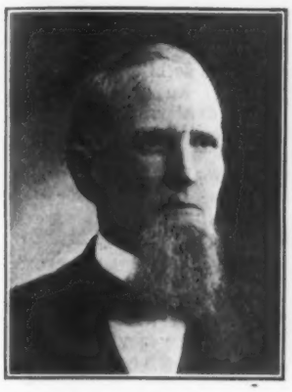
mail service and thereby increasing the already large deficit, but that we recommend that the mails be used for the dissemination of news and intelligence.

That the thanks of the association be extended to President Geo. V. Thompson and J. E. Digby, secretary and treasurer, for their services during the past year.

Appropriate resolutions were also adopted referring to the death during the past year of A. N. Stevenson, Renova, a member of the association.

The Question Box

conducted by M. L. Corey, secretary of the National Retail Hardware Association, was one of the features of



G. L. MOORE.

J. H. BOWERS.

the convention. It was taken up at several sessions, and the discussions of trade topics and problems were very generally participated in.

M. L. Corey's Address.

M. L. Corey, national secretary, delivered an address, illustrated by a chart, giving the history and growth of the National Retail Hardware Association, relating the work of the Joint Catalogue House Committee and discussing best methods of meeting catalogue house competition. He brought out the point that retail merchants often play into the hands of these houses by charging an unreasonable price for certain small articles, thus creating an unfavorable impression in the mind of the consumer.

Experiences were given by several members by which it was shown that the business of the mail order houses is on the increase in Pennsylvania, although purchasers often receive goods that are not of the quality represented. Dissatisfaction was most commonly reported in the case of Stoves.

Paints.

As showing the extravagant claims of catalogue houses regarding goods they offer Mr. Corey read a guarantee of its Paint by one of the Chicago concerns, which, among other absurdities, declared that its Paint was guaranteed to be in better condition at the end of five years than any other Paint at the end of two years. This Paint on official analysis by one of the Western States was demonstrated to be of a very inferior quality, the sellers being protected in their claims only by their distance from the consumer.

Parcels Post.

The question of parcels post was thoroughly discussed, and was the principal point touched upon by T. James Fernley, secretary of the National Hardware Association, who was present on the last day of the convention and made an able address. Mr. Fernley was especially active in the anti-parcels post campaign, reported in last week's issue of *The Iron Age* by our Washington correspondent. A resolution, given elsewhere in this report, was adopted, opposing parcels post on the ground that it would be damaging to small merchants throughout the country, and favoring 1-cent letter postage. Members informally agreed to write letters to their representatives in Congress urging them to use their influence against any measures looking toward the establishment of a parcels post. Warning was also given against certain plausible suggestions now receiving wide publicity, which are in reality a part of the parcels post propaganda and intended merely as an entering wedge.

The Insurance Company

was ably represented by its president, C. H. Miller, Huntingdon, who delivered an effective address on the subject, "The Best Insurance for You." Mr. Miller sketched the history of the mutual insurance movement, reviewed its advantages for the Hardware merchant and gave figures showing a steady annual growth in the amount written of more than $300,000, the grand total now standing at about $1,250,000.

Jobbers Selling Consumers.

The discussion of this subject was opened by J. F. Howe, Freedom, who delivered an able and practical address on the subject, "Shall Our Jobbers Sell Our Customers?" He was followed by several other members, whose remarks and experiences showed that retailers in all parts of the State have suffered from this evil, although it is more pronounced in some districts than in others. Mr. Howe said, in part:

If the question were, Shall my jobber sell to my customers it would be a different matter and would require no discussion, as it could be settled individually by each retailer, and it has been settled for myself, for I always refused to acknowledge any jobber as my jobber who sells to my customers, and right there is where the trouble has been. We have only been interested in seeing that the jobbers did not sell our trade, and have been indifferent as to whether he sold to

OUR NEIGHBOR'S CUSTOMERS,

or not. We must take hold of this matter in a different way if we would accomplish anything. We must consider every jobber who does business in the State as our jobber, and every customer of every retail store in the State just as though he were our individual customer. Nothing of any importance is ever accomplished without some sacrifice. We must expect at least to make some small sacrifice in this matter, if we accomplish anything. At a glance

IT LOOKS EASY

to prevent the jobber from selling consumers. We know if every retail store in Pennsylvania should stop buying from Jobber "A," he would cease to be a jobber from that moment. He might think he was a jobber for a short time, like the snake Pat killed by cutting off its head. But you do not find it so easy to refuse to buy from the jobbers that sell to your customers. If the jobber distrusts you know he has been guilty of this offense in your

JOHN F. HOWE.

C. H. MILLER.

neighboring town he will likely find some way of overcoming your prejudice. He will make concessions as to terms, or he will cut the price on some things, and thus you do not stand by your brother retailer, who has been robbed by this jobber. No matter how favorable it may be for us to buy from him, we must not do it. We must keep in mind the interest of the retail trade.

IF YOU HAD AN OWN BROTHER

in business in another town, would you patronize a jobber who sold direct to your own brother's trade? Then you must consider every dealer as your brother, and every retail store as though you were a partner in it. Ah! but there is the rub. It is so hard for us to consider

our neighbor's welfare. Why should we interest ourselves in helping our competitor? We have sad recollections of instances where our competitor across the street did not seem to be especially interested in trying to help us get along. Well, that is another subject. That is

LEGITIMATE COMPETITION.

But if some of our competitors have erroneous ideas of ways to get business, and cut prices too low, that would be a matter that likely should be talked over in our local associations, and if there are any of us here from communities having no local organization, we should go home and organize one at once. But this jobber question is our common enemy. We retailers must understand that it is a mutual affair, and, while we are looking out for the welfare of our competitors we are doing the very best thing possible for ourselves. Now, the jobber knows perfectly well that we have this situation entirely

IN OUR OWN HANDS.

The jobbers have an association that establishes rules which the manufacturers respect. But the jobber knows the frailties of human nature, and he knows the retailers will not stick together, or at least they never have. But we have come to a point where we must take hold of this subject. If the jobber does not encroach on you now, he very soon will.

Before we had a Retail Hardware Association we had no redress. At the most we could only refuse to buy from such jobbers. But with this organization, with 300 members, we not only have redress, but

ABSOLUTE PREVENTION.

If we will only stand by each other we can wipe out this evil that is doing more to demoralize the retail hardware trade than any other one thing. Perhaps some here think I am exaggerating this matter, that the jobbers are not really doing us much harm. Any one who says this is ignorant of the facts. Any one who has looked into this question knows they are. They are doing a great deal more harm than many of us realize. Every time a jobber sells a consumer an article at a wholesale price he is doing us an injustice by taking that much trade away, and he is doing many times more injury by the

DEMORALIZING AND DISTURBING INFLUENCE

it has on our trade. For all the neighbors and friends of this customer would know about it, and many of them would think they had been charged too much by the retail dealer. Many people cannot understand that the expense of conducting a business necessitates our selling goods at a considerable advance over jobbers' prices. Every time a jobber sells one of your customers an article at a wholesale price he is surely forcing you to cut down your legitimate price, whether you realize it or not.

I beg of you not to become passive about this, and accept it as one of the conditions that must be borne. It is not a "survival of the fittest." It is

NOT A NATURAL STATE OF AFFAIRS

that has come about in a legitimate way. I am the last man to protest against the inevitable or against anything that makes for progress, and by progress I mean conditions that tend to make the mass of people more comfortable and happy. If any retail store can legitimately supply my customers with what they want, can serve their needs better and furnish them with the comforts and luxuries of life for less money than I can (continuously, I mean, not spasmodically), then I will get out of the way and let them do it, and I will not whine about it, either. But I will protest against helping to build up, and equip, and arm, any piratical jobber craft that will turn their guns on me and my friends. This thing is illegitimate, and will eventually work to

THE UNDOING OF THE JOBBER

as well as of us, for their prosperity depends upon our prosperity. If we cannot sell goods at a profit, we will soon cease to be their customers. By their cutting in and taking the cream of our trade they are lessening our ability to buy from them. They are killing the goose that lays the golden egg. We have given the jobber our trade, and built up for him a position that gives him an unfair advantage when it comes to retailing. You can all see why this is so.

We all know he could not afford to come 25, or 50, or 100 miles from his house to get a few small orders from the consumer alone, at wholesale prices, and he would not think of doing it. If the retailer would not buy from him, and he was sent out after this consumer's trade, he could not afford to do it unless he got a price approximately what any other retailer, local, or otherwise, would have to ask for the same goods. But you see he is already here, he is on the spot. The trade your retail stores have given him has

PAID ALL HIS EXPENSES,

so it doesn't cost him anything to sell that bill to the consumer. Of course he can undersell you under such circumstances as these. Right here is where he has turned traitor. Up to this time he, the jobber, and you have been honest partners. He furnishes you the goods at a certain price, you invest your money, stack the goods up on the shelves, and retail them out as wanted, at a certain advance. Now he sees a chance to get a part of your profits as well as his own. And he is doing morally an illegal thing, just as much as if he were violating a written contract, for there is always the

IMPLIED AGREEMENT

that if the jobber solicits the dealer's trade he will not sell to the consumer. The fact that he sells to consumers only in towns where he fails to get an order from a dealer is no excuse for him. Some dealers have bought and continue to buy from him or he would not be here at all. This particular jobber robs your trade, and another robs mine. What we must do is to exterminate this mongrel breed.

Every one, jobber and retailer, knows the facts exist as I have stated. Both sides know it is not fair.

TO WHOM SHOULD WE LOOK

to correct it? To the jobbers? Certainly not. They are satisfied, as they are getting the best of it. Then it is from the retailers themselves that the remedy must come. The remedy is simple and effective. If every member of this association will only buy from jobbers who do not sell to consumers, neither in his own town nor in any other town, then one serious trouble of the retailer will be ended. We ask nothing unreasonable. We only ask the jobber to play the game according to the rules.

Retailing Hardware for Cash

was the subject of an exceedingly interesting address given by N. D. Cool of Elmer Hardware Company, Galeton. The business of this company was recently put on a cash basis to a very large extent, and Mr. Cool's account of the experiment, which he described as entirely successful, was listened to with great attention. After he had finished members were given an opportunity to question him on any points, and he answered them with the greatest frankness, explaining, however, that the system had only been in force a few months and he could doubtless give them more information another year. From Mr. Cool's address we quote the following:

The Elmer Hardware Company, composed of George Elmer, Roulette, Pa., and myself, Galeton, Pa., has been in business for about 18 years. We have always done a credit business, and, while our business has been one that could be termed a successful one, it has been made so by devoting our entire time and energy to the business, and our experience has been, many times, that when rounding up our business at the end of a season of brisk trade that many time accounts which we had considered good were, by reason of changes in the fortunes of the individual owing us, rendered worthless. We found that we were

BANKING ON THE GOOD HEALTH,

good business ability and honesty and good luck of a small army of people whose names appeared upon our books, and you will agree with me that in so doing we were continually taking long chances in our business, and we found that many times it seemed to cost as much time and expense to collect our accounts as it cost to sell the goods. Finally we arrived at a point where we decided to do a cash business or go out of business.

THE PLAN.

After arriving at this decision, the next thing in order was the method or plan to be adopted to bring about this change. It could not be done without notice. First, we published a letter in our weekly paper of about one column in length, stating the reason why we were making this change and showing up in a brief way the advantages that would accrue from the change, both to ourselves and our customers, and stating the time (which should not be less than three months in advance) at which we should change our system of doing business.

Next we wrote a personal letter to our customers and to others, stating our reasons for making the change and showing them as well as we could the advantage it would be to them and also to ourselves and requesting them to continue to give us their patronage and share with us the benefits of the plan of doing business on a cash basis.

Having gotton out notices of this change, and in every

way prepared the public for it as much as possible by calling attention to the proposed change in every issue of the paper, we next prepared a printed slip to be given out by the clerks, to be sent back to the customer who at any time should send for goods without the money. This we did from the fact that we did not care to trust the clerks to make any explanation.

THE NEXT THING IN ORDER

was at the stated time to make the change, and we had far less difficulty in effecting it than anticipated. As we made the change on October 15 last you will see that our experience thus far has been short, but I can say the results have been eminently satisfactory and gratifying, and to-day I find no discouraging features in the situation and am firmly convinced that the cash retail business can be carried on more successfully than business done in any other way. We carry on our books to-day accounts with our borough and township and school districts and a limited number of business firms, but under no circumstances do we extend credit to any other class of customers.

Exhibitors.

Representatives of a number of important manufacturing houses attended the convention and entertained the members of the organization at their rooms or in the hotel parlors, where they had installed exhibits of their product. Following is a list of the exhibitors, the lines shown and the representatives present:

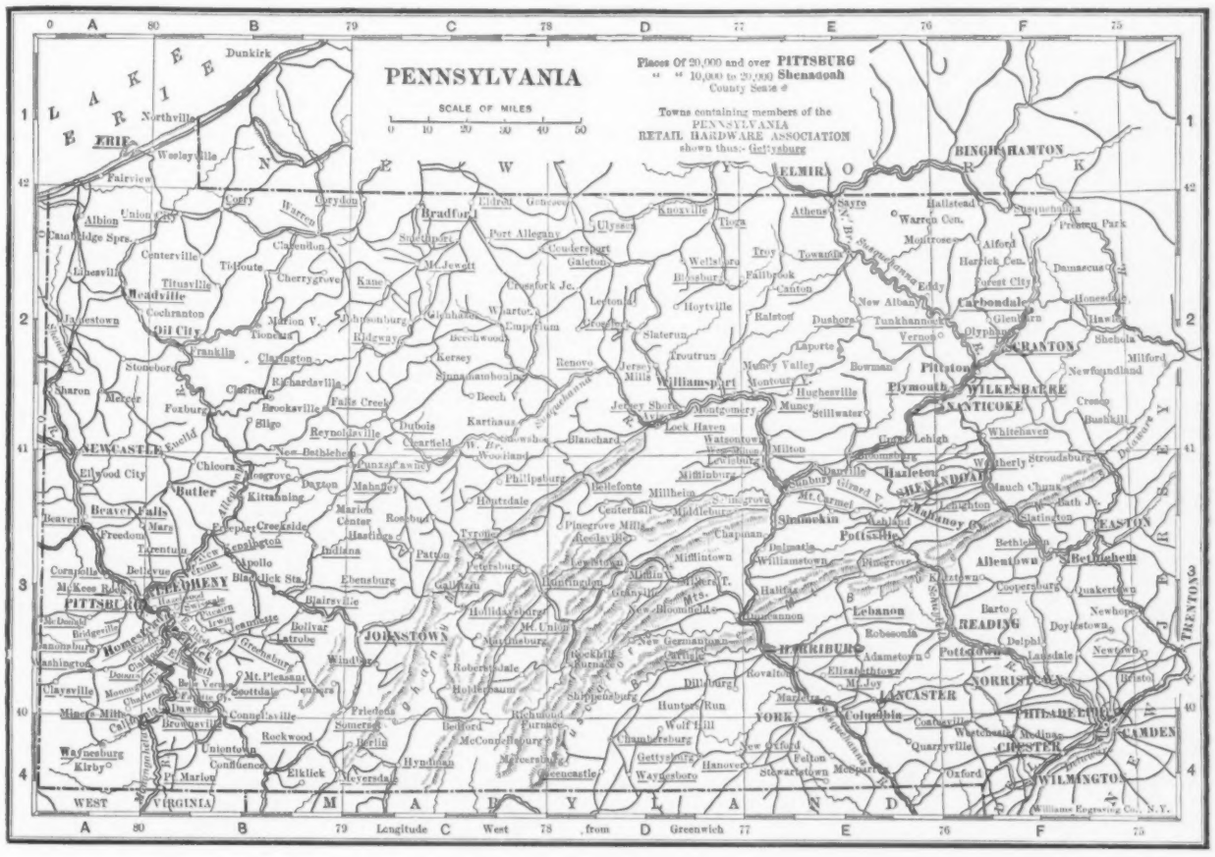
E. C. ATKINS & Co., Indianapolis, Ind.: General line of Hand and Cross Cut Saws, Saw Tools. Represented by A. F. Sinclair, D. R. Branson and C. A. Horr. Souvenirs, stick pins, playing cards and memorandum books.

CRANDALL CUTLERY COMPANY, Bradford, Pa.: Radium electric finish Pocket Cutlery, Razors and Shears, Butcher Knives and Razor Strops. Represented by F. A. Ansell.

BRADFORD UNION MFG. COMPANY, Bradford, Pa.: Semicircular Level, Plumb and Inclinometer. Represented by F. A. Ansell.

PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.: Pittsburgh Perfect Poultry and Garden Fence and Farm Fence. Represented by C. T. Burkhardt and R. C. Greth. Souvenir, cane in the form of Wire Nail.

SIMONDS MFG. COMPANY, Fitchburg, Mass.: Large line of


PENNSYLVANIA
SCALE OF MILES
0 10 20 30 40 50
Towns containing members of the PENNSYLVANIA RETAIL HARDWARE ASSOCIATION shown thus:- Gettysburg
Williams Engraving Co., N.Y.

Hardware Association Map of Pennsylvania.

TO THE SKEPTICAL ONES.

Now I am aware that many of you will be skeptical and will say that in your own particular locality you would be unable to do business at all unless you did business on credit. Let me call your attention to the fact that the large catalogue houses are pushing their business with great energy into all the towns and hamlets throughout the country, and even our next door neighbors are sending to them for all kinds of goods, and no one finds any objection to their system of doing business.

You are well aware that that the cash must accompany the order, in order to be recognized and the order filled. We also know that they make close prices, and that one of the reasons that they are enabled to do this is the fact that they do business strictly on the cash basis, having no loss; and I believe that one of the most powerful weapons that can be used against them is for every dealer in the land to adopt their method—that of requiring the cash when he parts with the goods—and I believe that within the next few years we shall witness some very radical changes in the retail business methods of our country.

WE MUST ADAPT OURSELVES

to the new conditions that arise, and the sooner we fight this class of competition with their own weapons the sooner we will be able to hold trade where it naturally belongs.

Hand, Butcher and Cross Cut Saws. Represented by G. T. Curtis and H. A. Schulte. Souvenirs, puzzles, watch charms and booklet entitled "Simonds' Guide for Carpenters."

PITTSBURGH STOVE & RANGE COMPANY, Pittsburgh, Pa.: Cinderella, Good Luck and Tremont Stoves and Ranges and Ætna and Tremont Furnaces. Represented by J. H. Kroberger and J. H. Reed. Souvenir, handsome pocket book.

YALE & TOWNE MFG. COMPANY, Stamford, Conn.: Mounted samples of Builders' Hardware and complete line of Yale Locks. Represented by H. B. Leinback. Souvenir, metal paper cutter.

WHITMAN & BARNES MFG. COMPANY, Chicago: Machinists' Supplies, Twist Drills, Reamers, Wrenches, Cotter Pins, Hay Tools, Mowing Machine Repairs and Lawn Mowers; also Diamond Open Mouth Hay Car set up. Represented by S. M. Kitchen and W. E. Lore. Souvenir, Bull Dog Wrench in leather case.

J. H. DOWNS, 235 Broadway, New York: Standard Steel Fence Posts. Represented by J. H. Downs and G. H. Rhoda.

PIKE MFG. COMPANY, Pike, N. H.: Assorted Oil Stone, Scythe Stone and Razor Hone Boxes, Corundum Wheels, new Coverfast Oil Stone Box and Pike's Stonoil. Represented by M. Gaudry. Souvenirs, silver ash trays and miniature oil stone box.

GEO. BARCUS & Co., Wabash, Ind.: A. D. Hughes Double Cut Miter Box. Represented by A. D. Hughes.

AMERICAN STEEL & WIRE COMPANY, New York: American and Ellwood Fence. Represented by L. A. Dietrich and J. D. Sankey.

WHITE LILY WASHER COMPANY, Davenport, Iowa: White line of Washing Machines, comprising White Lily, White Rose and White Daisy, with water motor set up. Represented by R. P. Searle and A. F. Victor. Souvenir, memorandum book.

OHIO VARNISH COMPANY, Cleveland, Ohio: Chinamel Varnish in assorted colors. Represented by N. Kramer. Souvenir, button.

MALLEABLE STEEL RANGE MFG. COMPANY, South Bend, Ind.: Malleable Steel Ranges. Represented by A. K. Sykes. Souvenirs, cuff links and hat pins.

ONE MINUTE WASHER COMPANY, Sandusky, Ohio: One Minute and Fast Washing Machines. Represented by A. J. Leake and H. Mendenhall.

WILLIAM PETER ESTATE, Toledo, Ohio: Screens and Screen Doors. Represented by Alvin Peter and G. W. Rockwell.

MAJESTIC MFG. COMPANY, St. Louis, Mo.: Malleable and Charcoal Iron Ranges. Represented by C. R. Tendick. Souvenir, watch fob.

DOVER MFG. COMPANY, Canal Dover, Ohio: Asbestos Sad Irons. Represented by R. F. Lund and G. E. Shawde.

SUMMIT FOUNDRY COMPANY, Geneva, N. Y.: Summit Stoves and Ranges. Represented by F. H. Frohlich and B. J. Conlan.

JAMES H. MANN, Lewistown, Pa.: Mann's Superior and Juniata Axes. Represented by J. C. Hazlett.

PETERS CARTRIDGE COMPANY, Cincinnati, Ohio: Peters Cartridges and loaded Shells. Represented by G. R. Benjamin. Souvenirs, stick pins and buttons.

PENNSYLVANIA ASSOCIATION MAP.

An intelligent idea of the extent of the Pennsylvania Association and the distribution of its membership throughout the State may be gained from the accompanying map. Towns and cities containing members are underscored. Names of cities having a population of 20,000 and over are in capitals, as SCRANTON, those of 10,000 to 20,000 are in full face type, while smaller places are in ordinary type.

A study of the map shows that while the central part of the State is pretty thoroughly covered and what may be called the Pittsburgh district is also fairly represented, the association is weak in the eastern section, and especially that of which Philadelphia is the center. It is suggested that this condition may be due to the fact that there is a strong local organization in Philadelphia, but leaving this city out of account it is obvious that if the association is to grow in strength and influence it must secure in the eastern towns and especially the larger cities a representation more nearly commensurate with their commercial importance.

List of Members of the Pennsylvania Retail Hardware Association.

ALBION.
L. G. Salisbury.
ALLEGHENY.
M. C. McKnight.
Geo. W. Rowbotton, Jr.
Tailer Hardware Company.
APOLLO.
Model Hardware Company.
ASKLAND.
Herman J. Stief.
ATHENS.
Finch Bros.
AVIS.
D. F. Love.
BEAVER.
Beaver Hardware Company.
J. S. Donaldson.
BEAVER FALLS.
F. F. Brierly.
W. J. Davidson.
R. E. Zimmerman.
BELLE VERNON.
J. F. Frye.
Wilson Hardware Company.
BELLEVUE.
J. A. Lindsey.
BERLIN.
C. W. Trissinger & Co.
BETHLEHEM.
J. S. Krause.
BLAIRSVILLE.
S. & L. S. W. Ray.
S. D. Stiffey & Son.
BLOOMSBURG.
J. G. Wells.
Geo. D. Clark.
BOLIVAR.
T. L. Berkley.
BRADDOCK.
Braddock Hardware & Supply Company.
Edmunds & Williams.
Fulton & Maggini.
J. A. Lowe.
Reid Bros.
BRADFORD.
Geo. A. Bodine.
J. M. Griffith & Son.
Morris & Longfellow.
BRIDGEVILLE.
H. Peollott & Son.
BROCKWAYVILLE.
Bond & Cooper.
BROWNSVILLE.
Jno. H. Coulter.
Geo. E. Fear.
G. L. Moore.
CALIFORNIA.
C. M. Savage.
CANONSBURG.
W. J. Elliott.
Samuel Munnell.
J. S. Washabaugh.
CANTON.
Lindley & Ronan.
Theo. Pierce.
CARBONDALE.
Bell & Brown.
J. B. Gilhool.
Mills Bros.
Von Beck Bros.
CHAMBERSBURG.
A. E. Solenberger.
CHARLEROI.
J. H. Bowers.
Buckhold Hardware Company.
Thos. P. Grant.
CHESTER.
Palmer & Gayley.
Paste-Harper Hardware Company.
CLAIRTON.
Clairton Hardware Company.
CLAYSVILLE.
Geo. E. Sprowls.
Geo. Sprowles.
CLEARFIELD.
F. J. Powell.
Powell & Bigler.
COATESVILLE.
V. S. Pownall.
CONNELLSVILLE.
Frisbee Hardware Company.
COLUMBIA.
C. R. Strickler.
COOPERSBURG.
A. O. Gehman.
CARAPOLIS.
Wickenhauser & Harmon.
CORRY.
C. B. McCray & Son.
CORYDON.
E. D. Everts.
COUDERSPORT.
J. H. Olmstead & Son.
CREEKSIDE.
Creekside Hardware Company.
CROSS FORKS.
E. Peltz.
DANVILLE.
J. H. Cole.
DAWSON.
C. C. Scroyer.
DONORA.
E. H. Darsie.
M. G. Spragg & Son.
DU BOIS.
F. W. Prothero.
DUNCANNON.
J. Y. Wills & Son.
DUSHORE.
James Cunningham.
EAST PITTSBURGH.
Jno. W. Alter.
EBENSBURG.
Geo. Huntley.
Shetting Bros.
ELDRED.
W. A. Young.
ELIZABETH.
Wylie Bros.
ELIZABETHTOWN.
Geo. D. Boggs.
ERIE.
Mehl & Sapper.
EVANS CITY.
Burry & Markle.
FALLS CREEK.
Frank B. Weaver.
FAYETTE CITY.
E. Hare & Son.
P. J. Slatterbech & Son.
FOREST CITY.
Aldrick & Co.
FRANKLIN.
Franklin Hardware Company.
FREEDOM.
J. F. Howe.
FREEPORT.
Freeport Hardware Company.
E. H. Wallace.
GALETON.
Albert Seltz.
Elmer Hardware Company.
Wm. Horn Company.
GALLITZIN.
E. Nelson.
GIRARDVILLE.
Griffith Hardware Company.
GREENSBURG.
Greensburg Hardware Company.
Temple & Son.
HANOVER.
J. C. Tanger & Co.
HARRISBURG.
Henry Gilbert.
Rider Snively.
HAZELWOOD.
Theo. Steiner.
HOLLIDAYSBURG.
C. B. Jacobs, Son & Co.
HOMESTEAD.
Orr Hardware Company.
T. T. Gillespie.
Nebo Bros.
HONESDALE.
Hon. Erk Bros.
P. R. Murray.
O. M. Spettique.
Graham Watts.
HOUTZDALE.
R. R. Flemming & Co.
HUGHESVILLE.
J. J. Maloney & Son.
HUNTINGTON.
S. B. Chaney.
C. H. Miller Hardware Company.
HYNDMAN.
M. H. Kramer.
INDIANA.
Jas. Stewart & Co.
A. T. Taylor & Son.
IRWIN.
L. C. Fox.
Geo. W. Lohr.
JAMESTOWN.
J. C. McCreary.
JEANNETTE.
Shumaker, Ringer & Foster.
JERSEY SHORE.
W. L. Wilson.
JOHNSTOWN.
F. E. Newman.
S. A. Snook.
Swank Hardware Company.
KANE.
Theo. Crowell.
Smith Hardware Company.
KNOXVILLE.
C. E. Lawrence.
F. H. Smith.
KUTZTOWN.
E. P. De Turk.
LANESDALE.
J. Irwin Ambler.
LEECHBURG.
Leechburg Hardware Company.
LEHIGHTON.
Lehigh Coal & Hardware Company.
LEWISBURG.
W. P. Difenderfer.
Reber & Fisher.
LEWISTOWN.
Jos. M. Selheimer.
Geo. W. Sheary.
LOCK HAVEN.
J. H. Fredericks & Bros.
Van Dyke Hardware Company.
M'KEES ROCKS.
L. F. Kellerman.
Digby & Smith.
M'DONALD.
Young & Madquick.
MAHANOY CITY.
Geo. S. Stokes.
MARS.
Craig & Kennedy.
MARIETTA.
Miller Hardware Company.
Stump & Nueller.
MARTINSBURG.
E. C. Bonebrake.
MEADVILLE.
Graham & McClintock.
L. M. Rhodes & Co.
MEYERSDALE.
P. J. Cover & Son.
H. S. Giesser.
Shipley Hardware Company.
MIFFLIN.
Guss & Sieber.
MIFFLINSBURG.
H. B. Young.
MILLVALE.
Jno. Steuler.
MILTON.
John Y. Buoy.
Hoover Bros.
Raup H. Hudson.
W. H. Strong.
MINERS MILLS.
Geo. Burt.
MT. CARMEL.
S. E. Bergstresser.
Beddall & Wardrop.
W. H. Phillips.
MT. JEWETT.
Geo. V. Thompson.
MT. JOY.
H. S. Newcomer.
MT. PLEASANT.
S. B. Colvin.
J. A. Stevens & Co.
W. H. Smith & Son.
MT. UNION.
A. S. Welch.
MONONGAHELA CITY.
H. C. De Vore.
Albert M. Gregg.
T. S. McCurdy & Son.
MONTOURSVILLE.
Mendelhall & Son.
MUNCY.
C. H. Bubb.
C. B. Vandyne.
MONTGOMERY.
H. E. Hagenbuch.
NEW BETHLEHEM.
Anderson Hardware Company.
Heath & Martin.
NEW CASTLE.
Smith, Hutton & Kirk.
NEW KENSINGTON.
J. S. McKean & Son.
NEW OXFORD.
Gilbert & Son.
NEWPORT.
Thos. H. Mulligan & Co.
NEWTOWN.
H. C. Worstall.
OIL CITY.
Richards & Richards.
OLYPHANT.
J. H. Lally.
PATTON.
J. R. Cordell
PETERSBURG.
E. M. Swoope.
PHILLIPSBURG.
Jones & Co.
PITCAIRN.
M. L. Salyards.
PITTSBURGH.
Jacob Bauman.
Gun, Tool & Supply Company.
McKay & Riley.
Oakland Hardware Company.
Rudolph Hardware Company.
Scarborough & Klauss.
Smith Hardware Company.
PLYMOUTH.
Doyle Bros.
S. U. Shaffer.
POINT MARION.
I. N. Conn.
PORT ALLEGHENY.
R. C. Bard & Son.
Bard & Cheney.
Gallup Hardware Company.
POTTSTOWN.
J. Fegerly & Son.
PUNXSUTAWNEY.
A. V. Hewett.
Punxsutawney Hardware Company.
Robinson Hardware Company.
QUAKERTOWN.
Scheetz & Price.
REEDSVILLE.
D. I. Heaps.
RENOVA.
A. N. Stevenson.
REYNOLDSVILLE.
Keystone Hardware Company.
RIDGWAY.
S. E. Bowan.
ROCKWOOD.
A. J. Growall.
SALTSBURG.
J. C. Moore.
Jno. Shadle.
SAYRE.
Bolich Bros.
SCOTTDALE.
J. I. Dick.
Elcher & Graft.
Loucks Hardware Company.
SCRANTON.
W. C. Cowles.
James B. Doyle.
Foot & Shear.
Gunster Bros.
SELINS GROVE.
Geo. R. Hendricks.
SEWICKLEY.
G. H. Hegner.
SHENANDOAH.
A. H. Swaln.
SLATINGTON.
Dettmer & Handwerk.
SMETHPORT.
Holmes & Gilfillas.
H. H. Redfield.

SOMERSET.
J. B. Holderbaum.
Shell Hardware Company.
SOUTH BETHLEHEM.
Drissell & Eberts.
SUNBURY.
G. W. Hackett.
W. H. Heim.
SUSQUEHANNA.
E. K. Owens.
SWISSVALE.
Hays & Coulter.
TARENTUM.
G. W. Goldinger & Co.
TIOGA.
Inscho & Inscho.
TITUSVILLE.
S. S. Bryan.
Kernockan & Co.
TOWANDA.
Dye & Brisee Hardware Co.
Spalding Hardware Company.
TROY.
Beardsley & Colony.
Jno. E. Dobbins.
TUNKHANNOCK.
A. P. Williams & Co.
TYRONE.
Franciscus Hardware Company.
A. R. Straitiff.
ULYSSES.
Geo. C. Marion.
UNION CITY.
Hays Carriage & Hardware Company.
UNIONTOWN.
D. N. Craft.
Fry & Gilmore.
WARREN.
Wm. Spinner.
WASHINGTON.
Boreland Bros.
W. P. Hastings.
S. J. T. Hough.
J. A. Little.
Paul & Post.
Jno. W. Seamen.
WATSONTOWN.
Shannon & High.
WAYNESBORO.
Beck & Corbitt.
Gilbert & Gordon.
Rohrer & Rhinehart.
WAYNESBURG.
E. L. Dewey & Co.
E. D. Lewis & Co.
WEATHERLY.
J. C. Sendell.
WELLSBORO.
Bailey & Blair.
Roberts, Gardner & Co.
WEST MILTON.
Grove Bros.
WHITE HAVEN.
Jno. A. Keck.
WILKES-BARRE.
Glasser, Weis & Roberts.
Turner & Vanscoy.
WILLIAMSPORT.
James Cockburn.
Kline & Co.
J. H. Link.
A. W. Lieb.
E. B. Neyhart.
L. Wurster.
WILSON.
Mendelsohn & Clairton Hardware Company.
WINDBER.
Albert G. Bentley.
OAKLAND, MD.
J. M. Davis & Son.

Wisconsin Retail Hardware Association.

IN point of attendance, diversity and extent of exhibits, accessions to membership and keen manifestation of interest displayed in association work, the tenth annual convention of the Wisconsin Retail Hardware Association, held in Milwaukee, February 7 and 8, excelled all former gatherings of this live and rapidly growing association. Of the 525 members more than 450 were present, and 75 names were added to the membership list during the two days' sessions. Upward of 75 Hardware jobbers and manufacturers had elaborate displays in the West Side Turn Hall, where the sessions were held,

and in the Republican House, the convention headquarters.

Discussions of the catalogue house question and threatened parcels post legislation engaged much of the business sessions, and reports of the work in the National organizations and committees that are doing their utmost to counteract these influences that threaten the retail Hardware merchant were received with enthusiasm and marked approval.

The report of the Mutual Fire Insurance Company was most gratifying, and Secretary C. A. Peck informed the policyholders that they will receive return premiums this year amounting to 33 1-3 per cent. of their policies. This company has been writing business 19 months, and already totals more than $1,145,000 insurance; has paid more than $4000 in losses, and shows a gain of between 60 and 70 per cent. above losses and expenses. Last year the returned premiums to policyholders amounted to $1200, and for 1906 it is estimated it will be approximately $3500.

Due to the careful management of Secretary-Treasurer C. A. Peck, the financial conditions of the association are in a flourishing condition, and on January 28, this year, the balance on hand was $1986.96, and the handsome souvenir programme netted a profit of $542.

Mr. Fernley's Address.

The convention was called to order on Wednesday morning by President R. M. Burtis of Oshkosh, and T. J. Fernley, secretary of the National Hardware Association, who was obliged to leave the city to attend another convention, was called upon to address the association before leaving. He said, in part:

I have watched, as secretary of the National Hardware Association, which is composed of 185 of the leading jobbers of the country, the growth of this retail Hardware movement with a great deal of interest. The National Hardware Association was formed in 1894. At that time there was no movement of this kind among the retail trade, and we recognized that a great deal of the loss of energy on the part of our association was due to the fact that there was no way in which we could secure the co-operation of the retail merchants of the country.

The facts are that those who produce the goods—our manufacturing friends—can be more quickly influenced by the retail men of the country than by your jobbing friends, first, because you are in a position to influence the user of the goods. We are not. A consumer who comes into your store for a given article can be induced to purchase some other article, or of similar make; the jobber has no such opportunity. The manufacturer realizes that the jobber is powerless to correct him when he transgresses what we generally look upon as proper

EMIL TEITGEN.

trade ethics; so, I say, from the standpoint of the jobbers' association we have watched the growth of these retail associations with a great deal of interest and we have done what we could to foster this movement.

Referring to the work of the wholesale and retail Hardware Joint Committee on the catalogue house question, Mr. Fernley said:

We are having great success. We need, however, to a greater extent the co-operation of the retail merchants of the country. We feel that they should more frequently enter complaint where they find manufacturers quote prices to the mail order houses which interfere with the profit of the legitimate retail merchant. Some one has tried to say that this is a jobber's fight with the catalogue

houses. Others have said that it was a manufacturers' fight, and others have said it was the retailers' funeral, &c. Our opinion is that it is a joint proposition absolutely; that our interests are one and inseparable; that if a mail order house is allowed to grow in connection with the sale of Hardware the manufacturer is going to be seriously affected; that the retailer will suffer and the jobber will have no business at all. So that in this Joint Committee we feel we are simply following along the line of mutuality in the proposition and that we must work in that way and in that way only.

Mr. Fernley also referred to the parcels post propositions which are now before Congress, pointing out the disastrous effect upon the retail merchants' business which would follow their adoption. He urged the association to come out for 1-cent postage as a retaliatory measure which would appeal to a large number of the people.

Presidential Address.

R. M. Burtis of Oshkosh followed with his annual address, in part as follows:

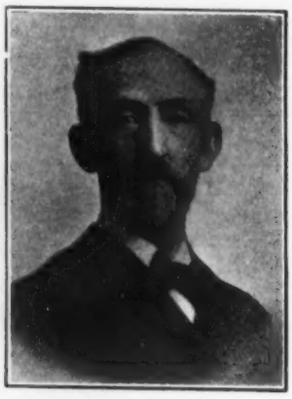
I think we may all be proud that we are Hardwaremen, for I believe there is no business that places a man in a better position to become a leader in his community in all things that make for manliness and strength of character than the Hardware business. There seems to be something in the fact that the Hardwareman has to do with things of iron and other weighty metals that gives many of the members strength and courage to tackle the hard problems that confront every community, and we can see all over the country notable examples of Hardwaremen filling places of honor and respect.

Hardwaremen can do much alone, but when they are united in any common cause the possibilities before them are great enough to cause any one to pause and reflect.

WE ARE NOT BANDED TOGETHER

that we may take advantage of any one or any class, but that we may protect our own interests and the interests of the community of which we are a part; that we may learn how to better serve our friends and neighbors and that we may have their full confidence

R. M. BURTIS.



C. A. PECK.

and esteem, so that while they give us their business, which is so essential to our existence, we may give them service that more than repays them for their patronage.

Each of us has his own work to do to gain and retain the confidence of his townsmen. We must ever be on the watch to guard against those who would by oily persuasion plant the seeds of distrust in the minds of our neighbors so they may reap the benefits of our downfall. Let each of us treat our customer as our friend, and should he be tempted away from trading with us let us reason with him as man to man.

If he is quoted lower prices let us be able to show him where there is a difference in quality in articles which may be described the same. If the articles are the same, let us meet the price and keep meeting it until price does not enter into the question. If we do not carry the goods, let us be willing and ready to get them. Do not force our friends away from us and compel them to send to others for what we should furnish them. Let us carry goods of quality, for a reputation built upon this is the permanent kind. Then with honesty as our guiding star, and the fact that we are the men on the ground in our favor, we have advantages that give us a long lead in the race.

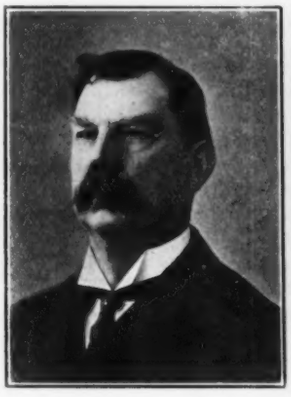
THE HARDWAREMAN MUST BE A MERCHANT.

Let him be constantly on the lookout for profitable side lines which will brighten up his stock. Let him fill his clean show windows with attractive goods and new articles to catch the eye of the buyer. Have the clerks learn that they must not be merely order takers, but that they must be salesmen, and in this way can the Hardware man retain his own, and not only hold what he has, but add to his prestige year by year.

It is a great help to us as individuals to know that we are not alone in the battle; that working with us are thousands of friends in our own line in this and other States. Back of them is the National Association; back of it comes the Jobbers' and the Manufacturers' associations, and back of all are our trade journals, exerting a powerful influence—surely a grand aggregation of forces to speed our work along.

LOYALTY.

There is one point which I would like to bring out so strongly that should you forget all else that you hear at



H. L. McNAMARA.

J. KORNELY.

this convention this one word would stay with you every day of the year to come. This word is loyalty. We must be loyal to the principles of our association, and when we take a point up and decide on a course of action we must work shoulder to shoulder as one man. We all know what good results will come of this. Let us never forget to live up to our convictions.

You will all be pleased to see the wonderful growth of our insurance company and to know that it has passed the experimental stage and is now firm and strong, and you can all use it to the fullest extent without a question of doubt that your interest will be taken care of as well as in any company and at a great reduction in cost.

Mr. Peck's Annual Report.

C. A. Peck of Berlin, in his annual report as secretary, said that there were 531 active paid-up members in the association at the time he prepared the report; that the gain in membership during the year had been 130, and he hoped this would be increased to 175 before the end of the convention. He continued:

The results accomplished should satisfy every one, and, while there is much yet to do, we ought to feel especially thankful for what has been done. The sympathy of interests that to-day exists between not only the jobber and the retailer but also includes the manufacturer, is an omen for good to all parties concerned. We have never since the first year lacked for funds, but have always managed to have enough in the locker to carry forward our work and meet all necessary expenses. This has been largely due to the patronage given by manufacturers and jobbers to our annual programme, and while it has always been our plan to assure those parties that we did not wish to urge them out of the pathway of their own best interests, still if they had anything they wanted to say to the trade, and felt we could give them value received, we should be glad to serve them.

Complaints have been more numerous than in previous years, but have been adjusted with a single exception which is now in the hands of your Executive Committee.

I am more than ever convinced of the high grade of business men who are engaged in the retail Hardware business and can only say that if we keep right along on the lines pursued in the past we shall see results most satisfactory. For our motto let us take this: "Nothing will satisfy Wisconsin but an enrollment of 90 per cent. of her Hardware dealers with us," and work, every one of us, to accomplish just that end.

Mr. Peck also referred to the splendid assistance given by the traveling men to the association work, many new members being obtained as a result of their efforts.

Mr. Peck, as treasurer, reported that the total receipts, including amount on hand last year, were $3034.25, and the total expenditures $1047.29, leaving a balance on hand January 28, 1906, of $1986.96.

Question Box.

Among the questions brought up for discussion under this head were the following:

1. *In a general cash and credit business, what percentage of annual sales should be in open accounts on the books on an average throughout the year?*

By H. L. McNamara: "I would say just as few as you can have upon the books. That is a question that each of us has to determine for himself. A man comes

O. P. SCHLAFER.

E. H. RAMM.

in, we think he is good, and we let him have the goods. We sometimes find out he is not good, and then we wish we had not sold him. I don't know of any other way to determine it."

By Mr. Findeisen: "I don't think it should exceed 20 per cent. for time sales."

2. *What is the most effective way to advertise?*

By Mr. Schlafer: "We use our show windows to the best advantage. We try to wash our windows as often as we can. We have large show windows, 55 feet front. We use three separate windows. We try to dress them up once every two weeks. We sometimes have special dressings and special displays, and at that time we use our daily papers to advertise the show. For instance, on Monday we called attention in the local press to our Sewing Machines, and we made a special show in the windows of Sewing Machines. Last week we had Phonographs advertised, and the next week we made a special advertisement of Cutlery. We sent East for a Gold Pocket Knife, and we advertised a display of a $50 Pocket Knife in the papers. The result was quite satisfactory."

By President Burtis: "Another good way to advertise is to write personal letters—that is, circular letters—making them personal and directing them to the people that you wish to reach on any particular article."

3. *Is it good business policy to make concessions in prices to farmers' clubs on staple articles?*

By J. W. Kraus: "We had a little experience of that kind. It was not a farmers' club but five or six brothers. They always kept together and made a list of the goods they needed and they came and bought for the whole family. Of course we always had to make a concession, because that is what they were after. They pay spot cash. We found it all right."

4. *Is a country telephone system a benefit or a detriment to the retail dealer?*

By Mr. Bogardus: "The time is coming when there will be a telephone in every farmhouse in this country. If you are wise and prudent you will take advantage of it and get into connection with the farmer. All you have to do is to step to your telephone, find out what he wants and get him to feel that you are the person to give him information, and the time will come when you will reap a harvest.

W. P. Bogardus's Address.

An interesting address was that of W. P. Bogardus, president of the National Association. He spoke in part as follows:

Already more than 20 State associations have affiliated themselves with the national organization and the growth of the several State associations has indicated that there is a rising interest in the questions that confront us as Hardwaremen and require a solution. Sometimes I think we fail to grasp the fact that there are certain things that hinder our progress that must be removed before we can hope for a solid foundation for our work and a permanent advance in the cause we all have so much at heart.

I think we have gotten by the idea that we are in business to kill off our competitors; that our success depends on the failure of some one else; that competition means war and that there can be no friendly rivalry; that salesmanship does not count, and that only the cutting of prices is of any real value in the building up and keeping of trade. I say I think we have gone by the time when the above and kindred arguments have the force they once had.

We recognize the force and value of scientific salesmanship, and we value salesmen who can sell goods at a profit; who know the value of the goods they are selling and the reasons why they are best for the customer to purchase; who can impress on the mind of the customer that what he is buying is worth the money he is paying. With this ideal salesmanship before us to stimulate us and to strive after we have much to do before we can reach as high as we would like to go.

IN THE EAGER RUSH FOR WEALTH

with the underlying idea that those who accumulate the fastest are the ones to pattern by we have lost sight of some very vital principles that are necessary for a successful building up of characters that will make of us men, for the crying need of the present generation is men whose integrity is above suspicion. For a quarter of a century or more there has been gradually creeping into business methods the idea that the end justifies the means and that success is to be measured by results brought about by any means necessary.

HAVE HAD THEIR DAY.

These teachers of business methods and business morals have had their day. The opening of the books and the turning on of the sunlight of investigation has wakened the public as it has not been awakened before.

W. H. BUSSE.

C. E. DEWEY.

And men who have charge of large things are beginning to realize that they are but trustees and that they will have to reckon with the public in their final settlements; that honor comes only through honesty: that true fame comes only by probity; and that integrity of character comes only by right living and right thinking. And as these false teachers are shown up in their true colors as the investigations proceed there comes a time when their places will be taken by other teachers, and it is with us what kind of teachers they shall be.

THE MOST SERIOUS QUESTION

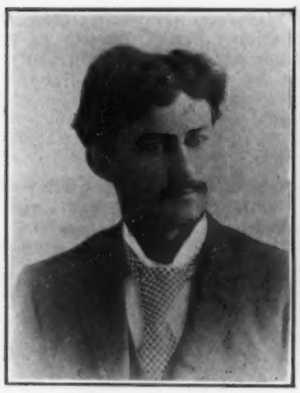
we have to consider is the catalogue house question. Controlled as they are by men who have been taught in the school where might is right, everything is legitimate that is not indictable and where price is the great recommendation for the goods they sell; where advertising is taught not as a statement of truth but as a means to catch the unwary. With such competition we have a very difficult question to solve. One hopeful sign is the evident anxiety of the catalogue houses to get further names and

the frantic efforts they are making to get the help of the Government. Absurd and unjust as their proposition is, it will have advocates, and it behooves us to be on the alert to block their efforts.

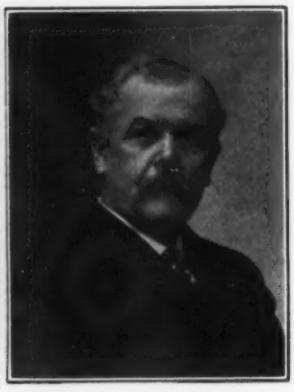
To send a pound through the mails for 5 cents that costs the Government 8 cents to carry is neither just nor right. But, startled by a noisy clamor of the great benefits that will come to some, and blinded by the dust kicked up by the interested, some legislation may be attempted by Congress. The men who are back of these schemes will be financially benefited in the event that they are successful. The questions of equity, justice and fairness do not enter in as part of the consideration for their success. That the Government will do the proposed work at a loss to be made up by general taxation, so that those who can derive no benefit from the proposed measures, if there are any benefits, will be compelled to help pay for it, cuts no figure with them. They demand favors from the Government that they may fill their pockets. Unwilling to meet fair, square competition, they hope to gain their ends, as others have done, by securing favors. We ask for no favors from the Government and we deny the right of any others to favors. All we ask and that we insist on is a "square deal."

Stereopticon Talk.

S. R. Miles of Mason City, Iowa, member of the Wholesale and Retail Hardware Joint Committee, delivered a stereopticon talk on the catalogue house question. Mr. Miles in his introductory remarks referred to the organization of this committee as designed for the exclusive consideration of ways and means of combating and overcoming the competition of the catalogue and mail order houses. The committee in its relations with manufacturers had found that many of them did not



A. H. KLEBERG.



JAMES MURPHY.

fully realize the regrettable conditions which had been brought about by this form of competition, and it was therefore determined to do everything possible to make them conversant with the matter. The stereopticon plates were accordingly prepared and were first given a hearing at the great gathering of jobbers and manufacturers in annual convention at Washington last November.

Before taking up the regular programme of plates views were presented of President Burtis and Secretary Peck, which were greeted with applause. The next plate showed the comparative growth of the State associations. Tables of figures and prices were thrown upon the screen, showing the small margin of profit over the cost price of many goods advertised by catalogue houses. Reproductions of pages of catalogues of catalogue houses were shown on the screen to illustrate the manner of advertising by catalogue houses. Pictures were also shown illustrating various phases of the parcels post question in appropriate typewriten form.

One of the members then asked Mr. Miles if manufacturers should refrain from furnishing samples of housefurnishing goods to retailers who go around the country and represent themselves as wholesalers. He added further that he found in the State of Wisconsin that there are retailers who will represent themselves when they talk to a customer that they can sell at wholesale prices, and he asked if it was in the power of the committee to take steps to have the practice stopped. Mr. Miles replied that he did not think the committee could take any action along that line without getting authority from the association.

Co-operative Buying.

In the absence of Henry Grimshaw of Elroy, Secretary Peck read his paper on "Co-operative Buying," as follows, in part:

Under the present order of things we retail dealers must buy our stocks from the jobbers and we are entirely dependent upon them for our wares. We are in no position to deal with the manufacturer direct. We cannot even approach him in a business way, as our individual orders are too small to secure his attention. The catalogue houses, on the other hand, with their immense capital and business, are no longer obliged to purchase of the jobber; they are in a position to deal directly with the manufacturer, or even do their own manufacturing. They give large orders and in certain lines command the entire output of the manufacturer. To a certain extent

THE JOBBER STANDS BETWEEN US

and the manufacturer. We pay him his profit. The mail order house does not have to do this; it saves to itself the jobbers' profits and in many instances shares in the profits of the manufacturers. This enables it to put its goods upon the market as cheaply and in some instances cheaper than the retail merchant can buy them of his jobber and still make a large profit.

This is the situation we have to meet if we wish to survive in this great commercial struggle now going on. Unless we meet it and meet it soon we may be obliged to close our doors and go out of the business we are now in.

In my opinion co-operative buying will enable us to meet the competition that is upon us. We should get together and establish an immense jobbing or supply house of our own. This supply house can then deal directly with the manufacturer and buy his products as cheaply as the catalogue houses do. As soon as we are able to buy the goods as cheaply as our competitors do we can in turn sell them as cheaply to our customers as they have been doing.

IT SEEMS FEASIBLE TO ME

that the retail dealers in Hardware, doing business in this State can form a corporation, stock in the corporation to be subscribed by the dealers themselves and open up a large supply or jobbing house in some city of this State centrally located. I mean centrally located in a commercial way, where suitable quarters could be had at reasonable rents and where the cheapest in and out freight rates could be had.

When fully organized it seems to me that such a corporation could supply its members all articles of wares and merchandise in our line as cheaply as they are now bought by the jobbers and the mail order houses. For instance, our company could agree upon a certain make of Stoves and enter into a contract with a manufacturer to take his entire output, or at least the exclusive right to handle his make of Stoves in this State.

SUCH A SUPPLY HOUSE

could maintain its own printing department and issue a catalogue containing cuts and prices similar to the catalogues of the mail order houses. These catalogues should bear the names of the local dealers, and direct the public to them for the goods quoted therein. The local dealer would find it to his interest to distribute the catalogues among his customers, and the customer would be enabled to compare the prices therein with other catalogues in his possession.

Mail Order Business.

Mr. Peck also read the paper prepared by N. Kawin of Chicago, who was unavoidably absent, on "Mail Order Business." We make the following extracts from the paper:

For more than two years I have given the mail order business a personal and close study. As the retail mail order business is conducted by the catalogue houses it is a proposition that has come to stay. There are many "Don'ts" that I would give the merchants of the United States, a few of which I will elaborate here.

Don't make faces at the farmer who is buying his goods from the mail order houses. He has just as much right to buy his goods where he pleases and just as much right to buy goods where he can get them cheaper as you have.

Don't make faces at the mail order houses. The mail order houses as a rule, the large ones at least, are an honorable body of men. If the mail order houses were not doing a square business they would not succeed. The very fact that their success is unquestioned demonstrates to any sensible men that they must be doing a square

business. That they are selling goods at the right price is demonstrated by the fact that their business is increasing.

THERE IS ONLY ONE PROPOSITION

to-day that can be accomplished and can be carried out by the retail merchants for their own protection against the mail order houses, and that is organization. Each and every line of business must organize either as a State body or as a national body. The Hardwaremen of Wisconsin are organized, as we understand it, thoroughly, and through this organization they can apply common sense methods that will give them back at least the lion's share of the mail order business in a very simple and inexpensive manner.

Each and every line of business must organize. I will eliminate all other lines for the present, as I am talking to the Hardware Association of Wisconsin and others who may profit by this. The first proposition we must come to in the mail-order business is that in each department they have special bargains. They cannot sell all goods without a profit, nor can they sell all goods at a profit of 10 or 5 per cent. They must make on an average 15 to 20 per cent. on their sales. We find, as no doubt you have, in every first-class catalogue that is being published by the leading mail order houses of Chicago and other cities every department has a number of "leaders."

SPECIAL PUBLICITY DEPARTMENT.

Let us state now, for argument's sake, that every retail Hardwareman of Wisconsin, organized as a body as you now are organized, will contribute even as little as $1 per month, or you might make it $2 per month, which would be $24 tax a year on every retail Hardwareman of Wisconsin for the purpose of promoting a Special Publicity Department. The Special Publicity Department can be located either in Milwaukee or Chicago, or in any other city centrally located. Each month there will be an income of not less than eight hundred dollars. This will be sufficient to pay the expenses of the organization and to pay for the printing, electrotyping, &c., of the special bulletin which will be published monthly for each and every member of the association.

Suppose you get out a four page bulletin, a sample of which we can submit to you at any time and which we have used with first-class effect wherever we have had the support of the merchants. These bulletins would cost not to exceed $3 per 1000, including printing, paper and labor. Each and every member of the association, let us state 400 in number, would receive 1000 of these bulletins on the first of every month. These bulletins will have listed therein the name of every merchant as a member of the association. Each and every merchant could send out these bulletins to the farmers in his territory, the bulletins to have a complete list of bargains taken from the catalogues of the mail order houses, such as ——— silverware, a special price on a range, and so on, as low as they can be bought from the mail order houses, to be shipped direct from the manufacturer through the association headquarters.

In fact, take 25 or 50 or even more of the leading bargains that are listed in the Hardware department of the mail order houses and make these same prices, only that you offer to ship the large articles direct from the factory, such as Ranges, Churns, Washing Machines, &c. There is not a single article but what 400 merchants, such as the Hardware Association of Wisconsin, reputable merchants, each and every one having a first-class credit, can buy just as cheaply as the mail order houses.

IF YOU, AS A BODY, WILL CONTRACT

for 4000 Ranges it would make only ten Ranges for each and every one of your association to dispose of. Now if you buy a Range at $16 and have it shipped direct from the factory to the farmer at the same price that the mail order house is shipping, in each and every case cash must accompany the order. The general manager at your association headquarters will be in a position to combat any influence the mail order houses may have on the Hardware business. You cannot buy these goods as individuals, it is absolutely impossible.

To illustrate my point further, if you will sell a certain kind of Saw at $1.25 and the mail order houses offer to sell the same saw for $1, there is no reason in the world why you could not buy 4000 Saws just as cheap as any of the large mail order houses. I am willing to carry out my point without a single penny of compensation; all that I would want would be to get paid for my time if I can show results, and if the association will vote to tax themselves, say, $2 a month for the purpose of carrying on this campaign, I shall be very much pleased to submit samples of bulletins, &c., and give a full outline of conducting a campaign to educate the farmers that they can buy their Hardware from the Hardware merchants of Wisconsin fully as cheap and in many cases a little cheaper than they can from the mail order houses, as they could save the freight on small goods by buying direct through the association.

AN EDUCATIONAL PROCESS

of this character will go a great way, so, in conclusion, I will state, organize. Keep your organization strong. Organize for the purpose of combating the mail order houses in your line only. Let each and every line take care of itself. We will be able to demonstrate to the jewelers and the general stores of Wisconsin, after you have made progress in this proposition, that there is only one plan, and that is for each and every line of goods to organize along the same lines, to co-operate with one another for the purpose of combating one of the strongest evils that ever has been placed in the path of the retail merchants.

Convention Committees.

The following convention committees were appointed:

TRANSPORTATION.—E. H. Ramm, New London; Rud. Puchner, Jr. Wittenberg.
AUDITING.—J. Montgomery, Wausau; E. Dewey, Kenosha.
PRESS.—O. P. Schlafer, Appleton; H. Schmitz.
RESOLUTIONS—J. Hessel, Antigo; J. W. Jones, Racine.
QUESTION BOX.—R. M. Burtis, Oshkosh; J. Murphy, Racine.
LEGISLATIVE.—John Hughes, Fond Du Lac; Mr. Cross, Port Washington.
GRIEVANCE.—J. Kornely, Milwaukee; F. J. McPherson, Oshkosh; B. Dexter, Cambria.

Plate Glass Insurance.

The subject of Plate Glass Insurance was discussed by C. E. Dewey of Kenosha, who quoted from the laws of the State showing the steps necessary to form such a company. He presented figures to show the probable profits of regular insurance companies in this line. The proposed organization of the company was referred to the Committee on Resolutions.

Benefits of Local Associations.

Emil Teitgen of Manitowoc read a paper on "Benefits of Local Associations," in part as follows:

The benefits of local association are many and important, both from a social and economic standpoint. I believe that every city and community in this State should have a local Hardware association. Some of you will say that your competitors are too mean and would not be trustworthy in any agreement. Now this is a mistake. Others who have tried it can tell you that they have met with great success where the conditions at first were extremely unfavorable to the formation of a local association, and these local associations have been maintained for years to the advantage of every member thereof.

THE BEST WAY TO GET TOGETHER

is to form an association for protection against poor accounts. Every community has its quota of deadbeats. Almost every merchant is willing to join an association for this protection, and the general public who learn you have a Hardware association should be informed that it is for protection against these bad accounts. After the association has been formed each member thereof should make out a list of his poor and dead accounts and bring it to the meeting and have it arranged in alphabetical order in a book for each merchant, and each merchant should have this book handy and when Mr. Deadbeat comes in and wants credit he can tell him that he owes Mr. Jones $5 and Mr. Smith $3 and so on and that he cannot give him credit until he pays these accounts. Of course the deadbeat becomes indignant and tells you that he can trade elsewhere and get plenty of credit; but he will go to the next place and he will be treated the same way, and after a while the deadbeat will realize that he cannot work that old game any longer.

YOU WILL FIND IT AN ADVANTAGE

to have each member of the association to carry a distinct line of such goods as Stoves, Refrigerators, Lawn Mowers, Garden Hose, Hay Carriers, Granite Ware, Cutlery and other things, thereby removing competition upon these lines and insuring you a better profit and enabling you to carry a better line—a higher grade of goods.

Then again you will find it an advantage to buy such goods as Linseed Oil, White Lead, Wheel Barrows, Building Paper in company with your competitor in carload lots and get carload prices and lower freight rates, enabling you to make a better profit on these lines, which are usually sold on a close margin.

The association members could arrange to help out one another in case they ran short on an article at an agreed upon price above cost, thereby enabling them to supply customers always at a profit, and very often at a

saving of telephone and express charges. Again, when one is long on goods the others could help out.

The matter of contractors' bonds is a very annoying problem in many towns. This can be handled through a local association.

A SAVING CAN BE MADE,

I believe, under organization in unprofitable advertising, such as Score Cards, Hotel Registers, Programmes, City Write Ups and such things that we are continually spending money on every year, simply because our competitor does it, knowing that we get no returns, and it is dead expense.

The catalogue house proposition, I think, can be reduced a little by co-operation through the local association. I think if a local association manages to get the names of the people in the neighborhood tributary to the town and looks them over they will find that a great many people that are sending to the catalogue house for goods are owing the local man, some of them a long time. In that case this merchant should write the customer, telling him that he wants his money and make it plain to him. If this thing is followed up, I believe, it will have a good effect. When people in the community understand that they are jeopardizing their credit by buying outside and that the home merchant knows that they are doing it, they are likely to feel more inclined to buy at home.

Loyalty.

Former President H. L. McNamara of Janesville read a paper on "Loyalty," from which we quote the following extracts:

It is presumed that when a man joins an organization or society he does so with the idea and purpose of thereby benefiting himself. It may be an honorary organization or it may be one through membership in which the new member will gain material benefits, but whatever kind of organization it may be some benefits should be derived from membership or the purpose of the organization is lost.

If, then, the organization confers benefits upon the member from the mere fact he is such, what is the reciprocal duty of the member of the organization? To me there is but one answer—loyalty to the organization. This is the very cornerstone of the structure of voluntary organizations, and without it the structure will crumble and fall into deep, dark ruins of failure. It is required from every member, from the head officer to the private in the rear rank. With it we present an active, energetic solid army, composed of every member. Without it our ranks are straggling and full of penetrable places.

The members of the Wisconsin Retail Hardware Association have been loyal. Because of this fact we are growing stronger every day and present one of the best State organizations in the country. Out of the 800 retail Hardware dealers in the State of Wisconsin we have over 500 enrolled as members of this organization—over 60 per cent. This is certainly a showing of which we may well be proud, and for it I give credit to every member of this organization. Your past loyalty has been appreciated and has borne its fruit, and I am confident that you will not let your zeal and enthusiasm wane the least bit during the coming year.

THE BENEFITS

of our organization are apparent to every member. We are banded together for mutual protection and co-operation. Our interests are the same and you may be sure that the organization as such will not do anything to harm or hurt any individual's business. In fact the reverse is true; the organization will go a long way to help and benefit any individual member. A protest from this organization to a manufacturer as to unfair competition will receive a great deal quicker attention and have much more weight than from an individual. The organization can carry on its fight until heard and the matter adjusted, while an individual, because of the expense and the time involved, might often be forced to give up the fight.

AS THE OFFSPRING OF THIS ASSOCIATION

the Wisconsin Hardware Dealers' Mutual Fire Insurance Company is entitled to at least your consideration. This company is now firmly established. We have had no large losses during the year, and what few losses there have been have been quickly and satisfactorily adjusted and paid. We have no outstanding indebtedness and the receipts have been large enough to justify us in declaring a dividend of 33 1-3 per cent. Our insurance is therefore cheaper than any other. That it is just as good as any will be borne out by the careful examination of our plans, articles of organization and the official acts since its organization.

LOYALTY TO THE NATIONAL ASSOCIATION

is as imperative as to this association. While the majority of us do not come in active contact with its officers and members in convention assembled as we do here, yet you have all gained through its influence. You have received the benefits of its fight against the unfair competition of the catalogue houses, and to-day you can credit the National association with having fixed the selling price of some 600 staple articles of hardware. By its influence and protest manufacturers have refused to sell their products to certain large catalogue houses who were willing to sell them at less than cost, merely as a means of advertising, unless such houses would agree to sell them at a fair price.

Chicago Retail Hardware Association.

Secretary Peck read a communication from the Chicago Retail Hardware Association inviting the Wisconsin retail Hardware dealers to attend the annual meeting of the Illinois Retail Hardware Association, at Chicago, on February 20, 21 and 22, at the First Regiment Armory. The Chicago association was represented at the meeting by G. R. Lott, J. L. Smith, W. B. Costello, F. F. Porter, Fred Ruhling, W. J. Krueger, C. H. Menzel and W. H. Bennett. Mr. Lott was invited to address the convention, and did so briefly, making the point that so much space for displays had been contracted for by manufacturers that it would amount to almost a national exhibit of Hardware.

Resolutions.

Resolutions were adopted as follows:

Resolved, That the Wisconsin Retail Hardware Association extends its thanks to W. D. Curtis of Madison, Wis., for his kind invitation to hold our next annual meeting at Madison; also we extend the thanks of the association to the Madison Hotel Men's Association for their invitation to hold the next meeting at Madison.

Resolved, That we extend our hearty thanks to the Milwaukee local association for their kind efforts in furnishing us a place of meeting; to the Milwaukee Merchants' and Jobbers' Association for favors received; to President Bogardus and S. R. Miles for the interesting and valuable suggestions presented by them; to all who have contributed in any way to the pleasure and profit of the members of the present and by far the largest meeting of our association; that we extend our sympathy and condolence to the family and friends of our deceased members, and hereby instruct our secretary to convey to them this action and spread the same upon our journal.

Resolved, That we appreciate the action of the Hardware manufacturers in refusing to sell Hardware to catalogue houses and pledge to them our patronage, when consistent with our business, and we further ask them on behalf of the Hardware jobbers and retail dealers of Wisconsin to refrain from selling Hardware to so called Hardware jobbers who in fact are only retail dealers.

Resolved, That the action of the manufacturers of Bar Iron in compelling the retail dealers to purchase large quantities of each size of iron in order to secure a reasonable price on same should be rescinded, and we hereby authorize and direct our secretary to request the National Retail Hardware Association to make an urgent request to have them do so.

Resolved, That every member be urged to write his Representative in strong terms protesting against the passage of any parcels post bill.

Resolved, That the secretary prepare the heading of a proper petition to be signed and copies of this blank form be sent to a member of the association in each town with a request that he secure the signatures of the merchants in his town and return the petition after being signed to Secretary Peck, to be forwarded by Mr. Peck to the various Representatives in Congress.

Wisconsin Implement Men.

The question of admitting the Wisconsin Implement dealers to membership in the association was discussed at length and it was decided that it would be advisable that they form an organization of their own, and an effort will be made to bring about such an organization during the present year.

New Officers.

Officers were elected for the ensuing year as follows:

PRESIDENT, Emil Teitgen, Manitowoc.
VICE-PRESIDENT, J. Kornely, Milwaukee.
SECRETARY-TREASURER, C. A. Peck, Berlin.
NEW MEMBERS OF THE EXECUTIVE COMMITTEE.—E. H. Ramm, New London, and A. H. Kleberg, Nekoosa.

Members of the Executive Committee, including the officers of the association, were chosen delegates to the convention of the National body.

Milwaukee Next Year.

Notwithstanding the invitations received to hold the next meeting at Madison, the constitution provides that

Milwaukee shall be the meeting place of the organization and it was decided to hold next year's convention in the Cream City during the first week in February, 1907.

Entertainment.

On Wednesday evening the visitors were the guests of the jobbers and manufacturers of Milwaukee at the Alhambra Theater and on Thursday afternoon a concert was given by the local retail Hardware association at the Turn Hall.

EXHIBITS.

Ample provisions were made for displaying the goods of manufacturers and jobbers in the Turn Hall and although there were a few exhibits at the Republican House the majority of them were in the main hall of the convention building. A list of those represented follows:

AMERICAN STEEL & WIRE COMPANY, Chicago: Field Fencing. Represented by G. W. Scott.

ART STOVE COMPANY, Detroit, Mich.: Laurel Stoves and Ranges. Represented by C. R. Clago, E. Hahn and F. M. Vanliew.

E. C. ATKINS & CO., Indianapolis, Ind.: Complete line of Saws. Exhibit in charge of W. E. Stalnaker, A. A. Teel, W. De R. Knight and G. W. Dunnington. Souvenir, memorandum book.

BIERSACH & NIEDERMEYER COMPANY, Milwaukee. Metallic fire proof windows.

BADGER BRUSH COMPANY, Milwaukee: Full line of Brushes. Exhibit in charge of G. B. Willard and R. O. Smith.

GEO. H. BISHOP & CO., Lawrenceburg, Ind.: Full line of Saws. Represented by John J. Sinzich.

BROWN & SHARPE MFG. COMPANY, Providence, R. I.: Full line of Tools. Represented by Fred. A. Rich.

ESTATE OF P. D. BECKWITH, Dowagiac, Mich.: Round Oak Stoves, Furnaces, Ranges. Represented by H. L. Mosher and D. W. Van Antwerp. Souvenir, imitation linen bound book entitled "Amos Hudson's Motto."

COMSTOCK-CASTLE STOVE COMPANY, Quincy, Ill. Full line of Stoves and Ranges. Represented by J. H. Bannon and M. McCabe. Souvenir, memorandum book.

CREAM CITY ROOFING & PAINT COMPANY, Milwaukee: Roofing. Represented by C. A. Minton and F. M. Johnson.

CALCULATOR SCALE COMPANY, Chicago: Calculating Scales. Represented by F. C. Grifford.

CRIBBEN & SEXTON COMPANY, Chicago: Stoves and Ranges. Represented by J.W. Elliott and D. J. Steele. Souvenir, match safe.

DIEHL NOVELTY COMPANY, Sheboygan, Mich.: Storm Sash Hangers and Window Hinge. Represented by J. Diehl.

DE KALB FENCE COMPANY, De Kalb, Ill.: Field Fencing. Represented by A. J. Upham.

DOVER MFG. COMPANY, Canal Dover, Ohio: Asbestos Sad Irons. Represented by Chas. T. Johnson and O. A. Keyser.

ENNO DORESTON & SON COMPANY, Milwaukee: Paints. Represented by W. H. Hoefs. Souvenir, pencil.

ELECTRIC HEAT REGULATOR COMPANY, Minneapolis: Electric Heat Regulators. Represented by L. A. Norton.

FAMOUS TUBULAR SHARPLES CREAM SEPARATOR COMPANY, Chicago: Cream Separators. Represented by A. W. Maire.

FULLER-WARREN COMPANY, Milwaukee: Stoves and Ranges. Represented by J. L. Potter, H. S. Crane and J. C. Hood.

GREEN BAY CORNICE & CORRUGATING COMPANY, Green Bay, Wis.: Ornamental Steel Ceilings and Architectural Sheet Metal Work. Represented by J. B. Macomber.

GEE WHIZ MFG. COMPANY, Des Moines, Iowa: Washing Machines. Represented by W. R. Davis.

GERMER STOVE COMPANY, Erie, Pa.: Stoves, Ranges and Furnaces. Represented by H. Meinshausen. Souvenir, pin.

HECHT & ZUMMACH, Milwaukee: Paints. Represented by W. E. Zummach.

HUNT-HELM-FERRIS & Co., Harvard, Ill.: Litter and Hay Carriers, Coaster Wagons, Children's Sleds, Cattle Stanchions and Barn Door Hangers. Represented by L. Eugene Norton. Souvenir, turtle paper weight.

HAISH WIRE & IMPLEMENT COMPANY, De Kalb, Ill.: Wire Fencing. E. C. Hopkins.

JOLIET STOVE WORKS, Joliet, Ill.: Moore's Stoves and Ranges Represented by H. W. Smith and W. C. Coates. Souvenir, leather grip tag.

KEUFEL & ESSER COMPANY, New York: Drawing Materials. Represented by O. S. Rhee.

A. L. LINDEMANN & HOVERSON COMPANY: Stoves. Represented by G. W. Zwick.

LUITINK & SONS MFG. COMPANY, Milwaukee: Ceiling Door Track.

LOWE BROTHERS COMPANY, Dayton, Ohio: Paints Represented by C. S. Ashbrook and H. R. Harries. Souvenir, watch fob.

C. W. LASHER MFG. COMPANY, Davenport, Iowa: Spring-in-Hand Pot Covers and Cabinet and Kitchen Kumfort Plate Scraper. Represented by C. W. Lasher, Jr.

MALLEABLE IRON RANGE COMPANY, Beaver Dam, Wis: Monarch Ranges. Represented by M. W. McQuarrie.

MILWAUKEE STOVE & HEATER COMPANY, Milwaukee: Stoves. Represented by W. J. Breese.

L. J. MUELLER FURNACE COMPANY, Milwaukee: Furnaces. Represented by L. J. Mueller, E. S. Seims and G. C. Miller. Souvenir, watch fobs.

METALLIC SCREEN COMPANY, Collins, Wis.: Metallic Screens. Represented by W. F. Fairfield.

MILWIS MFG. COMPANY, Milwaukee: Stamped Tin Ware. Represented by C. J. Gerich. Souvenir, pin tray.

MILWAUKEE CORRUGATING COMPANY, Milwaukee: Ornamental portico built at the entrance of the Republican House of galvanized steel and interior finish with stamped steel ceilings.

NATIONAL CUTLERY COMPANY, Detroit, Mich.: Oil Tempered Axes, Scythes, Knives and Hatchets. Represented by M. Dean Squires, E. H. Sutton and C. E. Canendar. Souvenir, pocket knife hone.

NORTH BROTHERS MFG. COMPANY, Philadelphia, Pa.: Ice Cream Freezers and Tools. Represented by D. L. Rugg. Souvenir, right and left hand pocket screw driver.

OHIO VARNISH COMPANY, Cleveland, Ohio: Varnishes. Represented by W. H. Angell.

O'NEIL OIL & PAINT COMPANY, Milwaukee: Paints. Represented by J. A. McShane.

JOHN PRITZLAFF HARDWARE COMPANY, Milwaukee: Miscellaneous Hardware. Represented by Henry Schmidt.

PROSSER'S MAGIC COOK CHEST COMPANY, Milwaukee: Cook Chest. Represented by John Prosser.

PITTSBURGH STEEL COMPANY, Pittsburgh: Fencing. E. C. Burdick and J. F. Williams. Souvenir, steel cane.

JAMES E. PATTON COMPANY, Milwaukee: Patton's Sun-Proof Paints and Painters' Materials. Represented by C. Ahle. Souvenir, savings' bank miniature of paint can.

PRITCHARD-STRONG COMPANY, Rochester, N. Y.: Lanterns. Represented by A. G. Brede. Souvenir, paper weight.

PIKE MFG. COMPANY, Pike, N. H.: Oil Stone and assorted Oil Stone Cases. Represented by J. A. Winters and R. J. Horton. Souvenir, miniature assortment case.

PENINSULAR STOVE COMPANY, Detroit: Stoves and Ranges. Represented by E. J. Nichols and C. W. Peterson. Souvenir, seal pocket book.

J. L. PRESCOTT & Co., New York: Stove Polish. Represented by J. L. Owens.

PETERS CARTRIDGE COMPANY, Cincinnati, Ohio: Cartridges. Represented by B. O. Seymour.

PATEK BROTHERS, Milwaukee: Paints. Represented by W. O. Schwarz.

QUAKER CITY RUBBER COMPANY, Philadelphia: Garden Hose. Represented by J. B. Freye.

CALVIN RUSSELL COMPANY, Penn Yan, N. Y.: Sheathing. Represented by Ralph B. Russell.

ROBINSON FURNACE COMPANY, Chicago: Furnaces. Represented by W. H. Bliss and E. H. Robinson.

SENOUR MFG. COMPANY, Chicago: Paints. Represented by G. H. Drew.

SPEICH STOVE REPAIR COMPANY, Milwaukee: Stoves and Ranges. Represented by Albert Speich and W. H. Nichols.

SUMMIT STOVE, RANGE & FURNACE COMPANY, La Crosse, Wis.: Stoves and Ranges. Represented by J. H. Johnson and G. C. Crippen.

SIMONDS MFG. COMPANY, Chicago and Fitchburg, Mass.: Full line of Saws. Represented by J. C. Miller, W. J. Feddery, R. D. Baldwin and J. Van Dyke, Jr. Souvenir, Simonds' puzzle.

SCHILL BROTHERS, Crestline, Ohio: Ranges and Heaters. Represented by H. L. Hoffman and C. H. Hoffman. Souvenir, match safe.

STOWELL MFG. & FOUNDRY COMPANY, Milwaukee: Exhibits in the West Side Turn Hall and Republican House. Barn Door Hangers and Hardware specialties. Represented by W. J. Evans. Souvenir, celluloid paper cutter.

PETER SCHMIDT, Pt. Washington, Wis.: Washing Machine. Represented by J. B. Till.

STRAYER & NESBIT, Minneapolis: Stoves and Ranges of the Home Pride Range Company, Marion, Ind., and the Estate Stove Company, Hamilton, Ohio. Represented by W. W. Strayer, W. L. Nesbit and C. W. Halderman.

SAVAGE ARMS COMPANY, Utica, N. Y.: Guns. Represented by F. L. Lawrence.

M. TOWNSLEY & SONS, Minneapolis: Lightning arresters. M. Townsley in charge of exhibit.

U. S. REGISTER COMPANY, Battle Creek, Mich.: Full line of Pressed Steel Registers. Represented by A. O. Jones and L. Moblo.

VOSS BROTHERS MFG. COMPANY, Davenport, Iowa: Washing Machines. Represented by A. Clifford. Souvenir, ash tray.

VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: Cream Separators. Represented by C. A. Nicklaus.

WISCONSIN FOUNDRY & STEEL WORKS, Cedar Grove, Wis.: Stoves and Ranges. Represented by John Jungers.

WASHINGTON CUTLERY COMPANY, Milwaukee: Village Blacksmith Hand Made Knives and Tools. Represented by Chas. Lehrkind.

WAHLE FOUNDRY & MACHINE WORKS, Davenport, Iowa: Washing Machines. Represented by H. H. Wahle and Geo. Matern.

WHITE LILY WASHER COMPANY, Davenport, Iowa: Washing Machines. Represented by Sam T. White. Souvenir, aluminum ash tray.

H. F. WATSON & Co., Chicago: Building and Roofing Paper, Asbestos Material. Represented by A. L. Levinson.

WESTERN STEEL & IRON WORKS, De Pere, Wis.: Post Hole Digger.

WHEELING CORRUGATING COMPANY, Wheeling, W. Va.: Corrugated Stove Pipe, Elbows, Tin Plate, Painted and Galvanized Roofing and Siding Material. Represented by W. J. Norris.

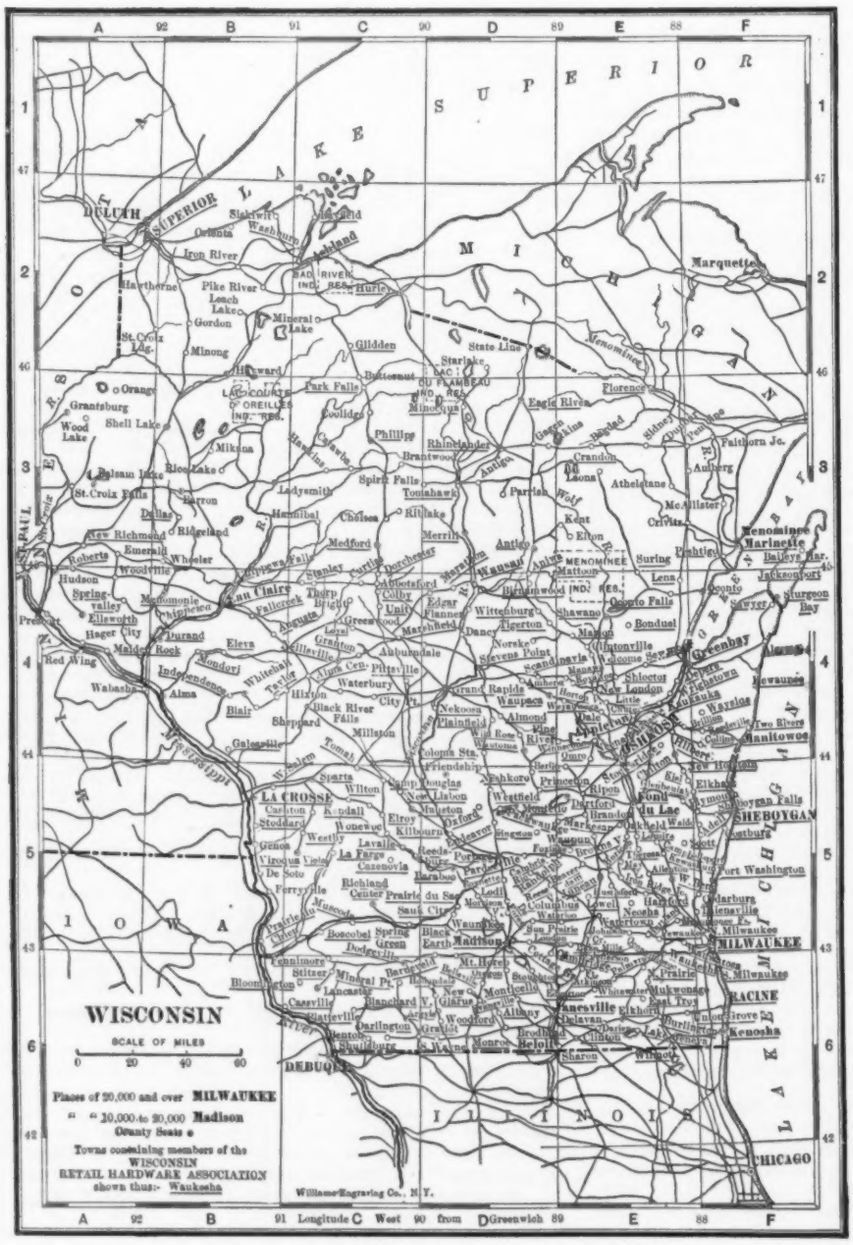
YALE & TOWNE MFG. COMPANY, Stamford, Conn.: Locks and Builders' Hardware. Represented by A. B. Howell.

WISCONSIN ASSOCIATION MAP.

The accompanying map affords a good idea of the extent to which the Hardware merchants of Wisconsin are represented in the influential association of that State. It will be observed that only the northern part of the State is thinly settled and that even there the association has its active adherents.

The membership of this association is now in the neighborhood of 550, a number of accessions being reported during the very successful convention just held. The increase of membership since the last annual meeting has been about 150, and as the number of legitimate Hardware merchants in the State is estimated at 800, not far from 70 per cent. of them are affiliated with the association.

It will be understood that the towns and cities under-



Hardware Association Map of Wisconsin.

scored contain association members. Places having a population of 20,000 or over are in full-face capitals, as, for example **MILWAUKEE.** Places of 10,000 to 20,000 are in full-face lower case, as, for instance, **Madison.** The smaller places are in roman lower case.

MEMBERSHIP OF THE WISCONSIN RETAIL HARDWARE ASSOCIATION.

ABBOTSFORD.
W. S. Johson & Son.
ADELL.
Aug. Seifert.
ALBANY.
Atherton & Gelbach.
ALGOMA.
Lidral & Andre.
ALLENTON.
A. L. Endlich.
J. Ruplinger & Co.
ALMA CENTER.
Curtiss & Edwards.
ALMOND.
J. C. Karnopp & Son.
F. A. Wood.
AMHERST.
L. R. Harmon.
ANIWA.
R. S. Hause.
ANTIGO.
J. Hessel Hardware Company.
A. H. Kohl Company.
Laughlin & Kelly.
J. C. Lewis Company.
APPLETON.
J. J. Hauert.
George Scheidemair.
Schlafer Hardware Company.
William Tesch.
ARGYLE.
H. J. Hendricksen.
ASHLAND.
R. W. French & Son.
Dopp & Watson.
AUGUSTA.
O. F. Braeger & Co.
H. A. Lunder & Co.
BAILEY'S HARBOR.
And. Braun.
BARABOO.
Lee & English.
A. H. Pratt.
BAYFIELD.
L. C. Wieland.
O. L. Shepard.
BEAVER DAM.
F. Rassman.
Wollenberg & Co.
J. V. Zweck.
Biechl Bros.
BELLEVILLE.
Gassette & Son.
BELOIT.
Murdock, Dunwidde & Co.
Wolfe & Becker.
Watson & Andrae.
BENTON.
J. W. Metcalf.
BERLIN.
E. K. Cunningham.
C. A. Peck Hardware Company.
BIRNAMWOOD.
L. W. Boetscher.
J. H. Thompson.
BLACK EARTH.
Fessenfeldt & Barber.
BLAIR.
K. S. Knutsen & Son.
BLANCHARDVILLE.
Blanchard Bros.
Steensland Bros.
BLOOMINGTON.
Samuel Kitto.
R. W. Hedeman.
BONDUEL.
H. G. Heck.
Rose Bros.
BOSCOBEL.
Ruka Bros.
Beinborn, Nauert Company.
BRANDON.
Kemper & Yerk.
BRILLION.
Koch Bros.
BRODHEAD.
W. N. Cobb.
Pierce & Marshall.
BROWNSVILLE.
George A. Spiegelberg.
BURLINGTON.
H. Kounst.
F. J. Sengbush.
C. B. Wagner.
CAMBRIA.
O. J. & D. L. Williams.
Beyer & Dexter.
CAMBRIDGE.
Casper Bagley.
CAMPBELLSPORT.
M. R. Boeckler.
William Wedde, Jr.
CAMP DOUGLASS.
R. L. Hanson.
C. H. Hoton.
CASHTON.
P. J. Hanson.
Marx Bros.
CASSVILLE.
Tate & Kleinpell.
CAZANOVIA.
Fischer Bros.
CEDARBURG.
H. Groth.
C. W. Lehman & Bro.
CHILTON.
Noel & Co.
CHIPPEWA FALLS.
Hoenig Bros.
J. W. Mason & Co.
CLINTON.
Reeder Bros.
CLINTONVILLE.
E. W. Felchow & Co.
H. W. Winter & Son.
COLBY.
Krepsky & Son.
Zillman Bros.
COLLINS.
Aug. Born.
COLOMA STATION.
Curran Bros.
COLUMBUS.
Keickbush & Nichols.
Julius Krueger (honorary).
G. T. Mueller.
COTTAGE GROVE.
E. C. Alsmeyer.
CRANDON.
Crandon Hardware Company.
Page & Laudeck.
CURTISS.
H. Machlett.
DALE.
G. A. Bock.
DALLAS.
Pelton Bros.
DARIEN.
H. J. Heyer.
M. A. Thorpe, Jr.
DARLINGTON.
F. L. Roy & Son.
DARTFORD.
F. M. Spencer.
DE FORREST.
Helsig & Grinde.
L. Leunberger.
DELEVAN.
C. M. Hughes.
A. A. Jacobs.
DE PERE.
G. G. Pratsch.
Goeman Bros.
DODGEVILLE.
J. H. Ford.
Louis Ryall.
DORCHESTER.
Fred Gutwasser.
DURAND.
Durand Hardware Company.
EAGLE RIVER.
A. G. Richeson.
EAST TROY.
Lacy & Clancy.
EAU CLAIRE.
W. W. Luebkeman.
EDGAR.
A. W. Puchner.
EDGERTON.
P. M. Ellingsen.
J. D. Hain Est.
ELEVA.
F. J. Hartman.
ELKHART.
John Arndt.
E. A. Stolper.

ELKHORN.
Charles Hotchkiss.
Charles Frelich.
ELLSWORTH.
Foss-Armstrong Hardware Company.
ELROY.
Grimshaw Bros.
ENDEAVOR.
S. Campbell.
EVANSVILLE.
F. A. Baker & Co.
FALL CREEK.
Gustave Roesler.
Zelman & Brueswitz.
FENNIMORE.
Roach Bros.
H. C. Henderson.
FLORENCE.
E. W. Petersen & Co.
FOND DU LAC.
George P. Dana.
John Haensgen.
John Hughes.
C. F. Lange.
Rusch & Hirth.
J. F. Wegner & Co.
Wilke Hardware Company.
A. J. Decker.
Mauthe-Furn. Company.
FORT ATKINSON.
Hager Bros. Hardware Company
Hauson & Kahl.
George W. Allen.
FOX LAKE.
Fred Haas.
Miller & Jones.
GALESVILLE.
F. A. Kellerman.
GLENBULAH.
James D. Kenna.
GLIDDEN.
Julius Schroder.
GRAND RAPIDS.
Centralia Hardware Company.
Johnson, Hill & Co.
George W. Purnell.
GRANTON.
A. J. Knorr & Co.
GRATIOT.
S. G. Bragg.
GREEN BAY.
W. D. Cooke.
Findeisen Bros.
A. Kimball.
Philip Neufeld & Co.
HARTFORD.
Esser & Schmidt.
Kissell & Sons.
Hartford Hardware Company.
HARTLAND.
O'Brien Hardware Company.
W. F. Wittenberg.
HILBERT.
Ruppenthal & Plank.
J. W. Grupe.
HOLLANDALE.
J. A. Dunstan.
Hegland & Lewis.
HORICON.
Louis Dietz.
HORTONVILLE.
Hagen Bros.
H. P. Meffert.
HURLEY.
Voigt & Christiansen.
HUSTISFORD.
E. G. Zillisch.
INDEPENDENCE.
Larsen & Short.
IRON RIDGE.
Antoine Wiese.
JACKSONPORT.
F. Meyer.
JANESVILLE.
H. L. McNamara.
Sheldon Hardware Company.
Burdick, Murray & Co.
JEFFERSON.
C. F. Bulwinkle Est.
John W. Heid.
J. W. Robisch.
JOHNSON'S CREEK.
H. F. Prenzlow.
JUNEAU.
Pieritz & Hartman.
Frank Zillisch.
KAUKAUNA.
Peter Fellar.
Haas & Hohman.
Whittier & Nommensen.
KENDALL.
Felker & Collins.
KENOSHA.
C. A. Dewey.
George W. Fay.
Charles Skidd.
KEWASKUM.
Rosenheimer & Co.
KEWAUNEE.
C. V. Mashek.
KIEL.
J. M. Duecker & Co.
Greve Bros.
G. H. Simon.
KILBOURN CITY.
Martens Bros.
KINGSTON.
H. Volkman.
LA CROSSE.
Justen Hardware Company.
Adam Kroner.
LA FARGE.
A. W. DeJean & Son.
J. J. Creeden & Co.
LAKE GENEVA.
Traver & Parshall.
Cobb Hardware Company.

LAKE MILLS.
George H. Bruns.
E. Saecker.
LA VALLE.
Eder Bros.
LENA.
Libal Bros.
LITTLE CHUTE.
F. J. Verstgen.
LODI.
Frank J. Collins.
LOMIRA.
M. C. Tolzman.
LONDON.
Henry Miller.
LOWELL.
John Sturner, Jr.
LOYAL.
Doyle & McGonigal.
MADISON.
Krehl & Son.
Kroncke Bros.
Stephenson & Studdeman.
Blied & Schneider.
William Drews.
Sumner & Morris.
MAIDEN ROCK.
Beverly White.
MANAWA.
Davids & Kinsman.
H. E. Shipman.
MANITOWOC.
Kerscher Bros.
Fred W. Meyer.
Rathsack & Sons.
Nicholas Schauss.
Emil Teitgen.
J. Walschlager & Sons.
Wernecke & Schmitz.
Worrell-Zeman-Stangel Company
Charles Kisselhorst.
MARATHON.
Lemmer Hardware Company.
MARINETTE.
H. B. Simcox & Co.
Watson Bros.
Aug. Westlund.
MARION.
W. R. Binkleman & Son.
E. M. Kissinger.
MARKESAN.
R. J. Evans.
J. W. Deniger.
MARSHFIELD.
Wm. Noll Hardware Company.
C. S. Sheerin.
M. Hosterman & Son.
MATTOON.
Kratz Bros. & Pelz.
MAUSTON.
C. W. Barney.
Ballentine Hardware & Furniture Company.
Behnken Bros.
MAYVILLE.
Aug. Thielke.
C. Engle & Son.
MEDFORD.
Aug. Roeber.
Mrs. Paul Schultz.
O. Griesser.
MENASHA.
G. A. Loescher.
Trilling Hardware Company.
MENOMINEE FALLS.
Fred Thomas.
MENOMINEE.
Carroll Lucas.
MERRILL.
H. R. Fehland & Co.
F. M. Montgomery.
Gustave Wenzel.
Howland & Hurd.
MILWAUKEE.
H. B. Bartelsen & Co.
Aug. Braun.
Julius G. Seyfert.
F. C. Burr & Sons.
R. D. Busse.
Gustave Butter.
B. Castle.
A. Clausing & Co.
E. H. Daniels & Co.
J. Droekamp Hardware Company
Herman Dietrich.
Dobl & Busse.
E. J. Krause.
J. Ferdenherdt.
Simon Fink.
C. B. Fristch.
Gawin Bros.
W. G. Grosjean.
Fred Benning.
Fred Herrenbruck.
Matt. John.
Kiefer. Hessler & Co.
J. Kornely.
O. E. Klug & Co.
H. M. Krogman.
Marschalk & Weiss.
Peter Paulus Hardware Company.
Pedersen & Groben.
Pflugart Bros.
Reinholdt Bros.
John Prasser.
Pritzlaff Bros.
Reinholdt Bros.
G. Raddatz & Co.
P. J. Lavies & Co.
A. Schupinsky.
Charles Stadt.
Stollenwerk Bros.
J. G. Trentlage.
Henry Vetter.
John Zimprich.
William Lindsay.
G. C. Scherdin.

MINERAL POINT.
Samuel Jenkins.
N. T. Martin.
J. J. Penhallagon.
William E. White.
MINOCQUA.
Minocqua Hardware Company.
MONDOVI.
H. J. Canar & Co.
William Helwig.
MONROE.
Kundert Bros.
C. H. Kundert Hardware Company.
Fred Lantz.
MONTELLO.
McVay & Salmon.
MONTICELLO.
F. J. Breylinger.
Gerber & Leibly.
MORRISONVILLE.
Morrison Bros.
MOUNT HOREB.
Heisig, Grinde & Evans.
MUKWANAGO.
Goodman & Schultz.
MUSCODA.
E. J. Schwingle & Co.
NEENAH.
William Krueger Company.
Strobel & Baumgarten.
NEILSVILLE.
A. F. Radke.
NEKOOSA.
A. H. Kleberg.
NEOSHO.
M. Wiser.
NESHKORO.
Waholtz & Schultz.
NEW GLARUS.
J. M. Schmid & Co.
NEW HOLSTEIN.
Leverenz & Schilling.
F. M. Matthaeus & Co.
NEW LISBON.
John Gill & Son.
Klinker & Robinson.
NEW LONDON.
Ostrich Bros.
E. H. Ramm.
Laugersen Hardware Company.
NEW RICHMOND.
Padden & Hughes.
NORTH FOND DU LAC.
E. L. Cole.
NORTH MILWAUKEE.
John Leu.
NORTH PRAIRIE.
Frank E. Hess.
NORWAY, MICH.
W. M. Ramsdell.
OAKFIELD.
W. W. Morrison.
A. A. Ewald.
OCONOMOWOC.
James A. Jones.
Loleburg Hardware Company.
Smith & Meadows.
OCONTO.
H. M. Barlament.
E. A. LaMeaux.
OCONTO FALLS.
F. J. Kilmer.
OMRO.
F. Gensch & Son.
OOSTBURG.
Matt Daane.
OREGON.
Marven Hardware Company.
OSHKOSH.
R. M. Burtis Company.
Hay Hardware Company.
Krippene Hardware Company.
F. Leach Hardware Company.
J. G. Menzel.
G. Ratzak.
F. Wille Hardware Company.
Tank & Tieman.
OXFORD.
Gus Wohlfert.
PACKWAUKEE.
W. A. Cole.
PALMYRA.
R. J. Washburn & Son.
PARDEEVILLE.
L. P. Ashley.
PARK FALLS.
W. R. Daskam.
Vincent & Vincent.
PESHTIGO.
F. E. McGraw.
PEWAUKEE.
S. E. McDowell.
PHILLIPS.
C. C. Kelleher.
Phillips Hardware Company.
PINE RIVER.
H. E. Frisbie & Sons.
PITTSVILLE.
Pittsville Hardware Company.
Seidl & Ebbe.
PLAINFIELD.
F. B. Rawson.
PLATTEVILLE.
F. W. Marcussen.
Oettiker Hardware Company.
J. M. Smith.
PLYMOUTH.
Gaffron & Leifer.
I. B. Weinsick.
PORTAGE.
J. E. Wells Company.
Schultz Hardware Company.
H. G. Lewis.
PORT WASHINGTON.
Ackerman Bros.
Kraus & Grau Hardware Company.

POYNETTE.
McKenzie & Westphal.
Price Bros.
PRAIRIE DU CHIEN.
Beach Bros.
PRAIRIE DU SAC.
M. C. Moore.
Stoddard & Leigh.
PRINCETON.
W. R. Yahr.
RACINE.
Anderson & Fritz.
Falkenrath & Wolfe.
Hornel Hardware Company.
Mohr-Jones Hardware Company
James Murphy.
White & Buck Hardware Company.
Christiansen Bros. Company.
H. A. Kersten.
Nichols Hardware Company.
Prostednik & Kraupa.
RANDOLPH.
I. E. Huff.
Randolph Hardware Company.
RAPID RIVER, MICH.
Dillabaugh & Adams.
REEDSBURG.
Ellenburg & Ost.
Aug. Seifert Hardware Company
REEDSVILLE.
E. W. Pautz.
REESEVILLE.
Robert Moore.
C. W. Steinacker.
RHINELANDER.
Dunn-Wood Hardware Company
Lewis Hardware Company.
RICHLAND CENTER.
D. G. James.
George H. Strong.
RIO.
Rio Hardware Company.
George M. Phelps.
RIPON.
Barlow & Seelig.
Fred Merbach.
Ripon Hardware Company.
ROYALTON.
E. G. Moore.
SAUK CITY.
Andrew Kahn, Jr.
W. W. Wasley.
SAWYER.
Charles Wolf & Co.
SCANDINAVIA.
Hanson Bros.
O. M. Sannes.
SCOTT.
G. A. Leifer.
SEYMOUR.
Droeger Hardware Company.
SHARON.
Field & Robb.
SHAWANO.
Schweers Bros.
A. Wipperman.
SHEBOYGAN.
H. Fredericks & Son.
Geele Hardware Company.
J. J. Koepsell Hardware Company.
Miller Hardware Company.
Trilling Hardware Company.
SHEBOYGAN FALLS.
Mrs. J. F. Hauerenstein.
SHIOCTON.
L. H. McLeod.
SHULLSBURG.
C. J. Meloy.
SOUTH MILWAUKEE.
Byron E. Walter.
SOUTH WAYNE.
J. A. Powell.
SPARTA.
M. F. Howell.
C. E. Simpson.
Baldwin Hardware Company.
SPRING GREEN.
Linns & Hood.
SPRING VALLEY.
Foss, Armstrong & Johns.
STANLEY.
D. J. Kean.
Carpenter & Mather.
STEVENS POINT.
Gross & Jacobs.
C. Krembs & Bro.
L. A. Martin.
STITZER.
F. H. Schuppener.
STOCKBRIDGE.
John Moehn.
STODDARD.
Henry Blashek.
STOUGHTON.
Anderson & Liebe.
Torgenson & Oleson.
STURGEON BAY.
J. S. Hay Hardware Company.
Scofield & Co.
Halsted-Maples Hardware Company.
SUN PRAIRIE.
I. D. Hayden.
E. H. Peshak & Co.
SUPERIOR.
Superior Hardware Company.
W. C. DeLong Est.
SURING.
John Dick.
TAYLOR.
B. Berg.
S. K. Bergseth.
THERESA.
Husting & Wagner.
THIENSVILLE.
Andrew Hilger.

THORPE.
T. O. Mosher.
C. H. Sheldon & Co.
TIGERTON.
Arthur Heins.
S. C. Arps Hardware Company.
TOMAH.
F. S. Barrows & Son.
Smith & Thomas.
Tomah Hardware Company.
TOMAHAWK.
Evensen Bros.
A. J. Olesen.
R. F. Koth.
Northern Hardware Company.
TWO RIVERS.
Smith & Selk.
R. H. Suttinger.
UNION GROVE.
Murdock & Jones.
UNITY.
Kohlhepp Bros.
VIOLA.
Schauer Bros.
VIROQUA.
Martin & Kuebler.
Rogersen Hardware Company.
WALDO.
H. W. Timmer.
WASHBURN.
E. Bergman.
B. Undgrot.
WATERLOO.
C. J. Janisch.
WATERTOWN.
D. & F. Kusel.
W. G. Pritzlaff & Co.
William Webber.
Henry Winkenwurder.
WAUKESHA.
C. A. Gorder.
Krock & Neff.
N. H. Leclear.
Perkins Hardware Company.
WAUPACA.
E. C. Williams.
E. W. Czeskleba.
Pope Bros.
WAUNAKEE.
P. R. Ripahan.
WAUPUN.
George W. Buelow.
W. C. Howard.
WAUSAU.
G. H. Bauman.
Montgomery Hardware Company.
Roemer & Thalheim.
A. Welchman & Son.
Emil Hohman.
WAUTOMA.
Hanson & Sleath.
Wooster & Jones.
WAUWATOSA.
A. I. Smith Company.
WAYSIDE.
Hill Bros.
WELCOME.
C. G. Balhorn.
WEST BEND.
Aug. Fugee.
WESTBY.
Petersen & Onstrud.
WESTFIELD.
J. P. Caves.
Hamilton Bros.
WEST SALEM.
H. C. Helder.
WEYAUWEGA.
Kosonke Bros.
John Fredricks.
WHITEWATER.
F. M. & M. M. Finch.
H. R. Charles.
G. H. Krohn.
WILD ROSE.
Bard & Hotz.
D. O. Jones & Co.
WILMOT.
William H. Morgan.
WILTON.
C. Hett.
Martin & Kuebler.
WINNECONNE.
Welson-Gove Hardware Company.
Christiansen & Abel.
WITTENBERG.
Rud. Puchner, Jr.
W. A. Cheeseman.
WONEWOC.
G. L. Bohn.
H. L. Talg.
WOODFORD.
M. H. Oleson.
WRIGHTSTOWN.
Rather & Schauble.
BARK RIVER, MICH.
J. H. Boyl.
DAGGETT, MICH.
Frank Palm.
ESCANABA, MICH.
A. Baum.

MISCELLANEOUS NOTES.

Rivetless Toggle Bolts.

George Cutter Company, South Bend, Ind., is manufacturing a rivetless toggle bolt, designed to take the place of screws and plugs for all purposes. The bolt has no rivet and the anchor bar being loose on the bolt, but provided with a hook end, keeps the parts snugly together while the bolt is being inserted in the hole. When screwing up the bolt only the finished head is exposed. The bolt is made in ten sizes, ranging from ⅛ x 3 inch to 5-16 x 6 inch, and is usually put up in boxes of 100 each, though the company is offering a special assortment for the benefit of merchants who have not yet started this trade in their vicinity.

Police and Pocket Positive Revolvers.

Colt's Patent Fire Arms Mfg. Company, Hartford, Conn., has decided to embody in its new pocket and new police revolvers the positive lock, owing to the large demand for the police positive .38 caliber revolver. The two models will hereafter be known respectively as pocket positive and police positive, caliber .32. The revolvers are alluded to as positively locked against accidental discharge, and it is pointed out that this important feature, added to the accuracy, reliability and durability of the company's goods, makes them desirable for pocket or house use.

Automobile Lamps.

C. T. Ham Mfg. Company, Rochester, N. Y., John H. Graham & Co., 113 Chambers street, New York, selling agents, has recently put on the market two new styles of lamps for use on automobiles, &c., as here illustrated. Fig. 1, the Tourist, has a special semaphore optical flint lens, which concentrates the light directly in front, greatly increasing the penetrating power, lighting, it is said, the road 200 feet ahead. The company offers it as an especially satisfactory lamp for small cars and runabouts which do not carry acetylene headlights, and as an excellent side lamp for large touring cars. The dimensions are: Extreme length and hight, 9¼ and 14 inches,

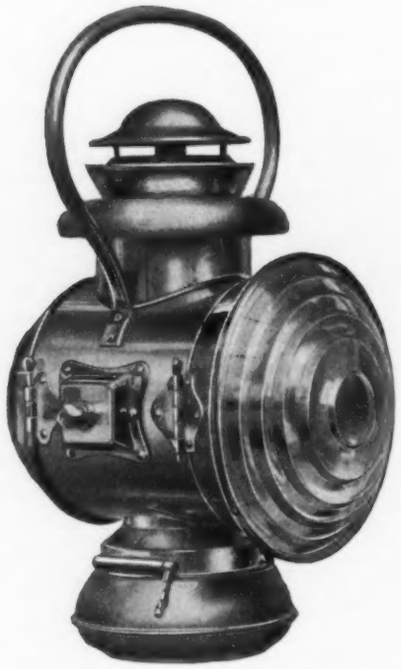


Fig. 1.—Tourist Automobile Lamp.

respectively; hight of dome, 12 inches; diameter of flange, 6½ inches, and diameter of corrugated lens, 6⅜ inches. The material is polished brass. Heavy brass is used, all parts are securely riveted, and where there is an extra strain the parts are reinforced. The lamp also has the company's cold blast principle, which provides a forced supply of fresh air to the burner, insuring an adequate supply of oxygen to feed the flame and providing

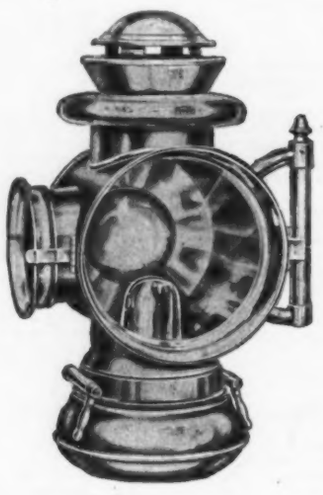


Fig. 2.—Vigilant Inspector and Tail Lamp.

a strong, brilliant and powerful white light. Fig. 2 reproduces Ham's Vigilant cold blast Inspector and Tail lamp. This lamp has a rigid side handle instead of bail, and is particularly serviceable for looking over the car and inspection purposes, and is said to neither blow out or jar out. It is made of polished brass with silver plated reflector and of brass enameled black with silver plated reflector. The dimensions are: Hight, 10¼ inches; extreme length, 5⅝ inches; diameter of front flange, 5 inches; diameter of white lens (front), 4 inches, and ruby or side lens, 3 inches. The Tourist lamp can also be used on launches and similar boats.

Twentieth Century Tool Box.

Patterson, Gottfried & Hunter, 146-150 Centre street, New York, are offering the tool box here shown. The round case is made of cold rolled steel, the ends of cast steel and the drawers of wood. The case is oxidized and lacquered, the cast steel ends are brass plated and the

Fig. 1.—Twentieth Century Tool Box.

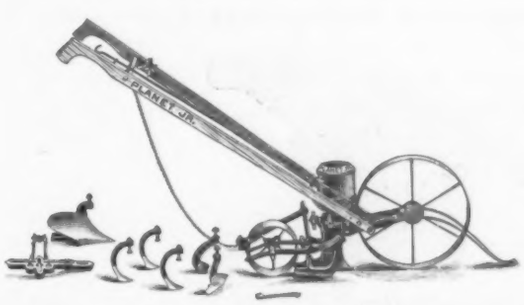
drawers are carefully finished and lined with black cloth. A solid brass hasp is securely attached to the sliding front cover and a substantial staple to the stationary case. A neat padlock accompanies each box. A handle is provided for convenience in carrying. The drawers have solid brass flush pull handles. The box is 9 inches high and 16 inches long, containing four drawers, each 14¼ inches long. The top and bottom drawers are 1⅜ inches deep

Fig. 2.—Twentieth Century Tool Box Opened.

and the other drawers are 1 inch deep. The box is useful on the shop bench, where it furnishes a very convenient cabinet for tools. It can be easily carried out on jobs, being compact and neat in appearance. It is referred to as lighter than a wooden tool box, much more durable and practically fire proof.

Combined Hill and Drill Seeder, Wheel Hoe Cultivator and Plow No. 6.

The Planet, Jr., seeder, shown herewith, is offered by S. L. Allen & Co., Philadelphia, Pa. The steel carrying

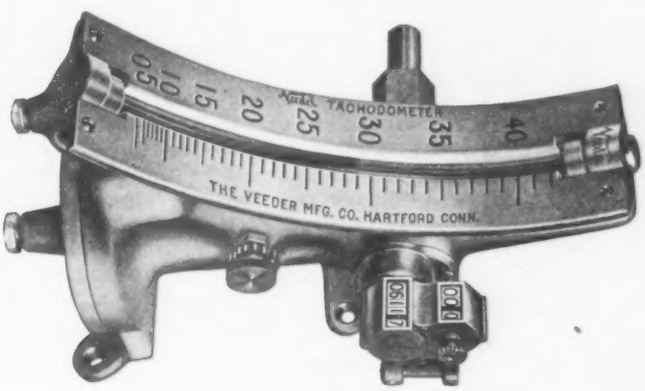


Combined Hill and Drill Seeder, Wheel Hoe Cultivator and Plow No. 6.

wheel is 16½ inches high, with forged steel spokes, making an easy running tool. The portion of the hopper where the feed wheel revolves is machine turned inside, and the feed wheel is also turned to fit, making the most accurate feed the firm has ever constructed. The outside is also machined to make the cut off work smoothly. The hill dropping device is made of steel and is referred to as light, strong and quick acting. It drops 4, 6, 8, 12 and 24 inches apart, the change from hill to drill and vice versa, being made in a few seconds. There are three change wheels, giving five different distances, the change from one to another being made quickly. The index is of new design and easily adjusted by means of a thumb screw. The cut off is within easy reach of the thumb and forefinger of the right hand, to prevent the loss of seed in starting or stopping. The opening plow is of a new shape to leave the seed in a narrow row. The coverers are alluded to as being ample in size and giving sufficient opportunity to swing to adjust themselves to all inequalities of the ground. The roller is large, wide and hollow faced, to leave the seed in excellent condition for germination. The roller carrier is malleable.

The Veeder Tachodometer

The Veeder Mfg. Company, Hartford, Conn., is offering the tachodometer herewith illustrated. It combines a speed indicator, or tachometer, with an odometer, the whole instrument being operated by a flexible shaft from one of the front wheels of an automobile. The claims made for the tachodometer are the following: Original and continued accuracy and constant calibration in use, a very distinct and perfect reading, entire absence of springs and delicate moving parts, ball bearing throughout, with no chance of parts binding for want of lubrication, drive above liquid level and consequently no stuffing boxes or leakage, entirely self-containing, a slow rate of revolution for the flexible shaft and great durability. The colored liquid used in the tachodometer, which may be wood alcohol, kerosene or other suitable liquid, is contained in a reservoir at the lower part of the instrument.



The Veeder Tachodometer.

Below the reservoir there is a small centrifugal pump consisting of a casing enclosing a small paddle wheel. From the reservoir of liquid there is a passage to the center of the pump, and when the paddle wheel is revolved the liquid is drawn down to the center of the pump and forced up into the indicator tube. The more rapidly the pump is operated the higher the colored liquid is forced up in the indicator tube. It is explained that the graduations on the scale were determined by exact tests. The indicator is curved to a segment of a circle, this form resulting in a more even spacing of the graduations, an increased scale and indicating space for a given vertical rise. It also places all points on the scale more directly before the eye. Temperature changes, vibration and ordinary wear, it is pointed out, do not affect the accuracy of the instrument. It will be supplied with indicator maximums of 40, 60 or 80 miles per hour, as ordered. The 40 mile instrument will be the standard. The lower gear box is ball bearing, and ball bearings are provided at both ends of the flexible driving shaft as well as in the instrument.

The firm of Davis & Weimescary Company, Butte, Mont., has been dissolved, J. E. Davis buying the interest of his partner and continuing the business under his own name.

New Designs in Builders' Hardware.

The Russell & Erwin Mfg. Company, New Britain, Conn., and 43-47 Chambers street, New York, has recently brought out seven new designs in Builders' Hardware Door Trim of a class suitable for the trade to carry in stock. Especial attention is directed to the St. Julien and Saxonia designs, Figs. 1 and 2, which are made in wrought bronze metal in exceptionally heavy and bold ornamentation, the character of which is designed to put them in a distinctive class. The purpose in view is to introduce art hardware in wrought metal sufficiently attractive in appearance and superior construction to permit of its use in connection with work for which in the past cast bronze goods only were considered appropriate. The Racine and Olympus designs, Figs. 3 and 4, are made in cast bronze; the Kensington and Abington, Figs. 5 and 6, in wrought steel, and the Chatham, Fig. 7, in cast iron. All of the designs are made in complete lines throughout, some being now ready and the remainder to be had in the near future.

Fig. 1.—St. Julien.

Fig. 2.—Saxonia.

Fig. 3.—Racine.

Fig. 4.—Olympus.

Fig. 5.—Kensington.

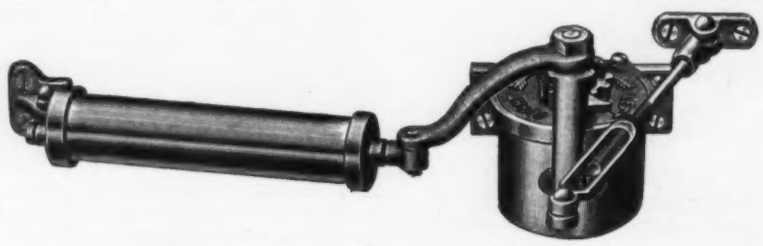
Fig. 6.—Abington.

A Group of New Designs in Builders' Hardware Trim.

Fig. 7.—Chatham.

Barnett's New Pneumatic Door Check and Spring.

All of the working parts of the door check and spring shown in the accompanying cut are of malleable iron and steel. The brass air cylinder is entirely closed at both ends to exclude dust and grit, and the extra powerful coiled spring of round steel wire is incased. There is no reservoir of oil. The spring has an adjustable tension and may be reversed from right to left-hand doors without changing the spring. As the spring has no initial tension it can be quickly removed and replaced. The check is placed near the center of a door, thereby, it is remarked, relieving strain on the door and hinges. By the use of a simple bracket, the check can be attached to the outside of a door. The check can be applied in a few minutes with the use of a screw driver and, it is explained, that when properly attached it will render long and efficient service without requiring any repairs. The check is put on the market by Oscar Barnett Foundry Company, Newark, N. J.



Barnett's New Pneumatic Door Check and Spring.

Imperial Pipe Fittings.

The pipe fittings shown in the accompanying cuts are designed to make quick repairs on automobile pipes. The ends of ¼-inch pipe are put through the two connections and the two ends joined by the center connector. The fittings are offered by the Imperial Brass Mfg. Company, 247 South Jefferson street, Chicago, Ill.

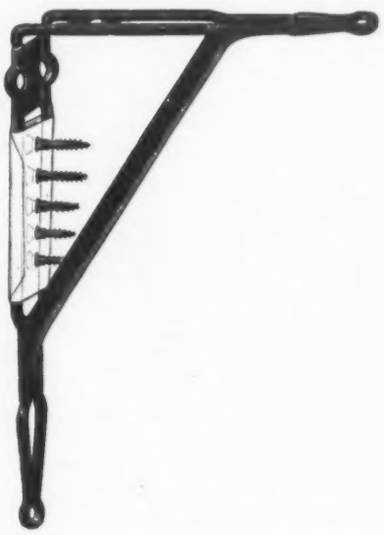
Imperial Pipe Fittings.

THE business of L. Best, 45 Vesey street, New York, will henceforth be carried on by the L. Best Company at the same address, a corporation having been recently organized under the laws of the State of New York. The company has the exclusive agency for the sale of the Sterling Emery and Corundum Wheels, and will also manufacture and sell Emery Grinding and Polishing Machinery and Polishers' Supplies; the general management of the business being the same as before. Mr. Best will endeavor to merit a continuance of the patronage with which he has been favored for a period extending over a quarter of a century.

THE STERLING WHEELBARROW COMPANY, Milwaukee, Wis., has moved into a new factory at 238 Oregon street, owing to inadequate floor space and facilities for the production of its Wheelbarrows at the old building. The new factory will afford four times the floor space of the old quarters, besides being better equipped in every way. The Sterling Company only started in business a year ago and attributes its success, as reflected in heavy orders for 1906 delivery, to having established a reputation for good Wheelbarrows at a fair price, rather than cheap ones at a cheap price. A feature of the company's Barrows is the roller bearing wheel.

Bradley Steel Shelf Brackets, Packed with Screws.

Atlas Mfg. Company, New Haven, Conn., is offering steel japanned shelf brackets packed with screws, catalogued as No. 100, as shown herewith. Among the advantages of having screws attached to the brackets the following are mentioned: That a clerk can handle a much

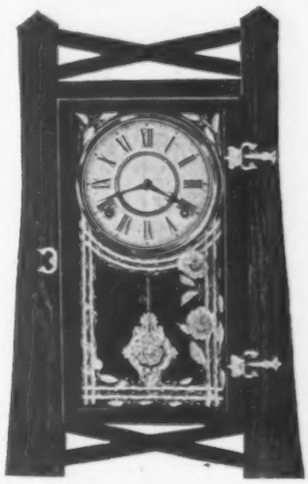


Bradley Steel Shelf Brackets, Packed with Screws.

larger business by being relieved of looking up and fitting the screws; that the customer is relieved of the annoyance of having to wait until the right size and number are picked out, or possibly going into another department to buy the screws; that there is no danger of the screws being forgotten, which the customer sometimes finds is the case upon reaching home, and that the right sizes are sure to be on the brackets. It is remarked that the points of merit already claimed for the bracket itself still hold good. The company is now packing special assortments of the brackets which it considers full cases, giving the trade the opportunity of carrying a light stock of the goods and still enjoying the full case price. The brackets packed without screws are No. 10, and those packed with screws are No. 100.

Monterey Clock Assortment.

The Sessions Clock Company, Forestville, Conn., and 37 Maiden lane, New York, has just begun to market what is described as the Monterey mantel clock assortment, one example of which is here illustrated. The three clocks constituting the group are numbered 43, 44 and 45. They are designed particularly for the hardware trade, for which they are packed three in a case. All are eight-day movements and strike on the half hour. The trimmings and pendulum are bronze finish to prevent tarnishing, and the Mission or weathered oak cases are 20 inches high. The dials are 6 inches in diameter, and the clocks can be supplied with or without alarm and with wire or cathedral bell. When furnished with alarm or cathedral gongs a small additional charge is made. The No. 43 at the sides is somewhat similar to the No. 44 illustrated, there being a difference in design, top and bottom, in the case between the sides and also differences in the etching



Monterey Clock Assortment; Style No. 44.

on glass front. The No. 45 has straight, parallel sides and variations above and below in the wood work, as well as a different glass front, thus providing at small outlay an attractive line at a uniform price and low cost.

Westlake & Hannam, Melrose, Iowa, have been succeeded in the Hardware Store and Implement business by Westlake & Knowles.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

	℔ gal.
Linseed, City, raw	44 @45
Linseed, City, Boiled	45 @47
Linseed, State and West'n, raw	42 @43
Linseed, raw Calcutta seed	@65
Lard, Extra Prime, Winter	68 @69
Lard, Extra No. 1	48 @49
Lard, No. 1	38 @40
Cotton-seed, Crude, f.o.b. mills	24 @25
Cotton-seed, Summer Yellow, Prime	31½@32¼
Cotton-seed, Summer Yellow, off grades	@..
Sperm, Crude	48 @50
Sperm, Natural Spring	@..
Sperm, Bleached Spring	@..
Sperm, Natural Winter	61 @62
Sperm, Bleached Winter	64 @65
Tallow, Prime	51 @53
Whale, Crude	@..
Whale, Natural Winter	42 @44
Whale, Bleached Winter	44 @46
Menhaden, Brown, Strained	26 @29
Menhaden, Light, Strained	27 @30
Menhaden, Bleached, Winter	32 @33
Menhaden, Ex-Bld., Winter	34 @35
Menhaden, Southern	@..
Cocoanut, Ceylon	℔ lb 6½@ 6¾
Cocoanut, Cochin	℔ lb 7¼@ 7¾
Cod, Domestic, Prime	34 @35
Cod, Newfoundland	38½@40
Red, Elaine	32 @34
Red, Sapopified	℔ lb 4¼@ 4¾
Olive, Italian, bbls	57 @62
Neatsfoot, prime	48 @49
Palm, Logos	℔ lb 6¼@ 6¾

Mineral Oils—

	℔ gal.
Black, 29 gravity, 25@30 cold test	10¼@11½
Black, 29 gravity, 15 cold test	11¼@12½
Black, Summer	10¼@11¼
Cylinder, light filtered	18 @19
Cylinder, dark filtered	16 @17
Paraffine, 903-907 gravity	13¼@14
Paraffine, 903 gravity	12½@13
Paraffine, 883 gravity	10¼@10¾
Paraffine, Red	12½@14

In small lots ½¢ advance.

Miscellaneous—

Barytes:		
White, Foreign	℔ ton	$17.50@19.00
Amer. floated	℔ ton	18.00@19.00
Off color, No. 2	℔ ton	13.50@15.00
Chalk, in bulk	℔ ton	3.50@ 3.75
Chalk, in bbls	℔ 100 lb	.@ .40
China Clay, English	℔ ton	11.00@17.00
Cobalt, Oxide	℔ 100 lb	2.50@ 2.60
Whiting, Common	℔ 100 lb	.43@ .48
Whiting, Gilders	℔ 100 lb	.50@ .55
Whiting, Ex. Gilders	℔ 100 lb	.55@ .60

Putty, Commercial—℔ 100 lb

In bladders	$1.70 @1.85
In bbls. or tubs	1.20 @1.40
In 1 lb to 5 lb cans	2.65 @2.95
In 12½ to 50 lb cans	1.50 @1.90

Spirits Turpentine—℔ gal.

In Oil bbls	68 @69
In machine bbls	68½@69

Glue—

	℔ lb
Cabinet	11 @15
Common Bone	7 @ 9
Extra White	16 @24
Foot Stock, White	11 @14
Foot Stock, Brown	8 @11
German Hide	12 @18
French	10 @40
Irish	13 @16
Low Grade	9 @12
Medium White	14 @17

Gum Shellac—

	℔ lb
Bleached Commercial	39 @40
Bone Dried	49 @50
Button	42 @45
Diamond I	@55
Fine Orange	46 @50
A. C. Garnet	43 @..
D. C.	60 @..
Octagon B	@62
T. N.	45 @46
V. S. O.	54 @55

Colors in Oil—

	℔ lb
Black, Lampblack	12 @14
Blue, Chinese	36 @46
Blue, Prussian	32 @36
Blue, Ultramarine	13 @16
Brown, Vandyke	11 @14
Green, Chrome	10 @15
Green, Paris	@24
Sienna, Raw	12 @15
Sienna, Burnt	12 @15
Umber, Raw	11 @14
Umber, Burnt	11 @14

White Lead, Zinc, &c.—

	℔ lb
Lead, English white, in Oil	9½@ 9¾
Lead, American white, in Oil:	
Lots of 500 lb or over	.. @ 7¼
Lots less than 500 lb	.. @ 7¾
In Barrels	.. @ 6¾
Lead, White, in oil, 25 lb tin pails, add to keg price	.. @ ½
Lead, White, in oil, 12½ lb tin pails, add to keg price	.. @ 1
Lead, White, in oil, 1 to 5 lb ass'ted tins, add to keg price	.. @ 1½

Lead, American. Terms: For lots 12 tons and over ¼¢ rebate; and 2% for cash if paid in 15 days from date of invoice; for lots of 500 lbs. and over 2% for cash if paid in 15 days from date of invoice, for lots of less than 500 lbs. net.

	℔ lb
Lead, White, Dry, in bbls	.. @ 6¾
Zinc, American, dry	4¾@ 5
Zinc, French:	
Paris, Red Seal, dry	9½
Paris, Green Seal, dry	10½
Antwerp, Red Seal, dry	8¾
Antwerp, Green Seal, dry	10
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over	12¾@13¾
Lots of less than 1 ton	13¼@13¾
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over	11¾@12¼
Lots of less than 1 ton	11¾@12¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or mixed grades. 1%; 25 bbls., 2%; 50 bbls., 4%.

Dry Colors—

	℔ lb
Black, Carbon	5 @10
Black, Drop, American	4 @ 6
Black, Drop, English	5 @15
Black, Ivory	16 @20
Lamp, Com.	4½@ 6
Blue, Celestial	4 @ 6
Blue, Chinese	29 @32
Blue, Prussian	27 @30
Blue, Ultramarine	4½@15
Brown, Spanish	½@ 1
Carmine, No. 40	$3.50@3.60
Green, Chrome, ordinary	3½@ 6
Green, Chrome, pure	17 @25
Lead, Red, bbls., ½ bbls. and kegs:	
Lots 500 lb or over	.. @ 7¼
Lots less than 500 lb	.. @ 7¾
Litharge, American, bbls	.. @ 7¾
Ocher, American	℔ ton $8.50@16.00
Ocher, American Golden	2½@ 3½
Ocher, French	1¼@ 2½
Ocher, Foreign Golden	3 @ 4
Orange Mineral, English	10 @12
Orange Mineral, French	10¾@12¼
Orange, Mineral, German	8¼@10
Orange, Mineral, American	8½@ 8¾
Red, Indian, English	4½@ 8½
Red, Indian, American	3 @ 3¾
Red, Turkey, English	4 @10
Red, Tuscan, English	7 @10
Red, Venetian, Amer.	℔ 100 lb $0.50@1.25
Red Venetian, English	100 lb $1.15@1.75
Sienna, Italian, Burnt and Powdered	3 @ 9½
Sienna, Ital., Raw, Powd	3 @ 6½
Sienna, American, Raw	1½@ 2
Sienna, American, Burnt and Powdered	1¼@ 2
Talc, French	℔ ton $15.00@30.00
Talc, American	℔ ton 15.00@25.00
Terra Alba, French	℔ 100 lb 90 @1.00
Terra Alba, English	℔ 100 lb 90 @1.00
Terra Alba, American, ℔ 100 lb, No. 1	70 @80
Terra Alba, American, ℔ 100 lb, No. 2	60 @65
Umber, T'key, Bnt. & Pow	2½@ 3¼
Umber, Turkey, Raw & Pow	2½@ 3½
Umber, Burnt, Amer	1¼@ 2
Umber, Raw, Amer	1½@ 2
Yellow Chrome	12 @14
Vermilion, American Lead	10 @25
Vermilion, Quicksilver, bulk	@65
Vermilion, Quicksilver, bags	@66
Vermilion, English, Import	75 @80
Vermilion, Chinese	$0.90@1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33⅓ @ 33⅓ & 10% signifies that the price of the goods in question ranges from 33⅓ per cent. discount to 33⅓ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, ℔ doz. $3.00.....33⅓%
North's 10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—American—

Eagle Anvils.....℔ lb 6¾@7 ¢
Hay-Budden, Wrought.....9@9¼ ¢
Horseshoe brand, Wrought.....9@9¼ ¢
Trenton .....℔ lb 9@9¼ ¢

Imported—

Peter Wright & Sons.....℔ lb 10½ ¢

Anvil, Vise and Drill—

Millers Falls Co., $18.00.....15&10%

Apple Parers—See *Parers, Apple, &c.*

Aprons, Blacksmiths'—

Livingston Nail Co.....33⅓%

Augers and Bits—

Com. Double Spur.....75@75&5%
Jennings' Pats., reg. finish.....50&10@60%
Black Lip or Blued.....60&10%
Boring Mach. Augers.....70&10%
Car Bits, 12-in. twist.....50&10%
Ford's Auger and Car Bits.....40&5%
Forstner Pat. Auger Bits.....25%
C. E. Jennings & Co.:
No. 10 ext. lip, R. Jennings' list..25%
No. 30, R. Jennings' list.....40&7½%
Russell Jennings'.....25&10&2½%
L'Hommedieu Car Bits.....15%
Mayhew's Countersink Bits.....45%
Millers Falls.....50&10&7½%
Ohio Tool Co.'s Bailey Auger and Car Bits.....40&10%
Pugh's Black.....20%
Pugh's Jennings' Pattern.....35%
Snell's Auger Bits.....60%
Snell's Bell Hangers' Bits.....60%
Snell's Car Bits, 12-in. twist....60&10%
Wright's Jennings' Bits.....50%

Bit Stock Drills—See *Drills, Twist.*

Expansive Bits—

Clark's small, $18; large, $26....50&10%
Clark's Pattern, No. 1, ℔ doz. $26; No. 2, $18.....65%
Ford's, Clark's Pattern.....60&5%
C. E. Jennings & Co., Steer's Pat..25%
Swan's 60%

Gimlet Bits—

Per gro.
Common Dble. Cut....$3.00@3.25
German Pattern, Nos. 1 to 10, $4.60; 11 to 13, $5.75

Hollow Augers—

Bonney Pat., per doz..$5.50@6.00
Ames .....25&10%
Universal.....20%
Wood's Universal.....25%

Ship Augers and Bits—

Ship Augers.....45&5@60%
Ford's .....33⅓@5%
C. E. Jennings & Co.:
L'Hommedieu's 15%
Watrous' .....35&5%
Ohio Tool Co.'s.....40%
Snell's 40%

Awl Hafts—See *Handles, Mechanics' Tool.*

Awls—

Brad Awls:
Handled .....gro. $2.75@3.00
Unhdled, Shldered...gro.63@66¢
Unhandled, Patent..gro.66@70¢
Peg Awls:
Unhandled, Patent..gro. $1@$1.4
Unhdled, Shldered..gro. 65@70¢
Scratch Awls:
Handled, Com...gro. $3.50@4.00
Handled, Socket..gro.$11.50@12.00
Hurwood 40%

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

Single Bit, base weights:
First Quality.....$6.75
Second Quality.....$6.25
Double Bit, base weights:
First Quality.....$9.00
Second Quality.....$8.50

Axle Grease—See *Grease, Axle*

Axles—Iron or Steel

Concord, Loose Collar...4¼@4¾ ¢
Concord, Solid Collar...4¾@5¼ ¢
No. 1 Common, Loose...3¼@3¾ ¢
No. 1½ Com., New Style3¾@4¼ ¢
No. 2 Solid Collar.....4@4½¢
Half Patent:
Nos. 7, 8, 11 and 12....75@75&5%
Nos. 13 to 14.....70&10@75&5%
Nos. 15 to 18...75&10@75&10&5%
Nos. 19 to 22...75&10@75&10&5%

Boxes, Axle—

Common and Concord, not turned lb..4½@5¢
Common and Concord, turned. lb., 5½@6¢
Half Patent.....lb. 8½@9¢

Bait—Fishing—

Heudryx:
A Bait.....20%
B Bait.....25%
Competitor Bait.....20&5%

Balances—Sash—

Caldwell new list.....50%
Pullman .....50&10@60%

Spring—

Spring Balances.....50&10@60%
Chatillon's:
Light Spg. Balances.....40&10%
Straight Balances.....40%
Circular Balances.....50%
Large Dial.....30%

Barb Wire—See *Wire, Barb.*

Bars—Crow—

Steel Crowbars, 10 to 40 lb.... per lb., 3@3¼¢

Towel -

No. 10 Ideal, Nickel Plate..℔ gro. $8.50

Beams, Scale—

Scale Beams.....40&10@50%
Chattillon's No. 1.....30%
Chattillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:
No. 12 Wire Coppered ℔ doz. $0.85; Tinned $1.00
No. 11 Wire Coppered ℔ doz. $1.10; Tinned $1.20
No. 10 Wire Galvanized..℔ doz. $1.75
Western W. G. Co.:
No. 1 Electric.....℔ gro. $7.80
No. 2 Buffalo.....℔ gro. $9.00
No. 3 Perfection Dust.....℔ gro. $8.00

Egg—

Holt-Lyon Co.:
Holt, No. A, Japanned....℔ doz. $1.20
Holt, No. 1, Tinned.....℔ doz. $1.50
Holt, No. B, Japanned....℔ doz. $2.00
Holt, No. 2, Tinned.....℔ doz. $2.25
Lyon, No. 2, Japanned....℔ doz. $1.25
Lyon, No. 3, Japanned....℔ doz. $1.50
Taplin Mfg. Co.: ℔ gro.
No. 60 Improved Dover.....$6.00
No. 75 Improved Dover.....$6.50
No. 100 Improved Dover.....$7.00
No. 102 Improved Dover, Tin'd..$8.50
No. 150 Improved Dover, Hotel..$15.00
No. 152 Imp'd Dover, Hotel, T'd.$17.00
No. 200 Imp'd Dover Tumbler....$8.50
No. 202 Imp'd Dover Tumbler, T'd.$9.50
No. 300 Imp'd Dover Mammoth, ℔ doz. $25.00
Western, W. G. Co., Buffalo.....$7.00
Wonder (R. M. Co.)..℔ gro. net, $6.00

Bellows—

Blacksmith, Standard List.. 60&10@70&10%

Hand—

Inch..	*6*	*7*	*8*	*9*	*10*	*Net Prices.*
Doz..	*$4.75*	*5.70*	*6.65*	*7.60*	*8.85*	

Molders—

Inch..	*9*	*10*	*11*	*12*	*14*	*Net Prices.*
Doz...	*$8.00*	*9.00*	*10.50*	*12.50*	*14.50*	

Bells—Cow—

Ordinary goods...75&5@75&10&5%
High grade.....70&10@70&10&5%
Jersey .....75&10%
Texas Star.....50%

Door—

Abbe's Gong.....45%
Burton Gong.....50%
Home, R. & E. Mfg. Co.'s.....55&10%
Lever and Pull, Sargent's....60&10&10%
Trip Gong.....50&10@50&10&5%
Yankee Gong.....55%

Hand—

Hand Bells, Polished, Brass.60&10%
White Metal.....60%
Nickel Plated.....50&10&60%
Swiss .....60@60&7½%
Cone's Globe Hand Bells.....33⅓@35%
Silver Chime.....33⅓@35%

Miscellaneous—

Farm Bells.....lb. 2¼¢
Steel Alloy Church and School 50&10@60%
American Tube & Stamping Co. Gongs 75%
Table Call Bells.....50@50&10%

Belting—Leather—

Extra Heavy, Short Lap..60&5%
Regular Short Lap....60&10&5%
Standard 10%
Light Standard.....70&5%
Cut Leather Lacing.....50%
Leather Lacing Sides, per sq. ft. 25¢

Rubber—

Agricultural (Low Grade).... 75@75&5%
Common Standard....70@70&10%
Standard .....60&5@60&10%
Extra .....60@60&5%
High Grade.....50&5@50&10%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%
Detroit Stoddard's Lightning Tire Upsetters, No. 1, $4.25; No. 2, $7.25; No. 3, $10.50; No. 4, $16.25; No. 5, $20.50.
Green River Tire Benders and Upsetters 20%

Bicycle Goods—

John S. Leng's Son's 1902 list:
Chain 50%
Parts 50%
Spokes 50%
Tubes 60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See *Augers and Bits.*

Blocks—Tackle—

Common Wooden.....70&10@75%
Hartz St. Tackle Blocks.....50@50&5%
B. & L. B. Co.:
Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50&10%; Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50&10%; Wire Rope Snatch, 50%;
Lane's Patent Automatic Lock and Junior 30%
Stowell's Novelty, Mal. Iron....50&10%
Stowell's Self Loading.....60%
See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c...80&10@40&10%

Boards, Wash—See *Washboards.*

Bobs, Plumb—

Keuffel & Esser Co.....33⅓%

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread): ⅜ x 6 and smaller.....75@—%
Larger and Longer..65&5@—%
Phila. Eagle,$3.00 list May 24,'99 80%
Bolt Ends, list Feb. 14, '95.... 65&10@—%
Machine, ⅜ x 4 and smaller 75@—%
Machine, larger and longer.. 65&5@—%

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:

Inch....	*3*	*4*	*5*	*6*	*8*
Per doz.	*$0.30*	*.35*	*.45*	*.60*	*.80*

Cast Iron Spring Foot, Jap'd:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.20*	*1.50*	*2.25*

Cast Iron Chain, Flat, Japanned:

Inch.....	*6*	*8*	*10*
Per doz.....	*$1.00*	*1.40*	*1.65*

Cast Iron Flat Shutter, Jap'd., Brass Knobs:

Inch.....	*6*	*8*	*10*
Per doz.....	*$0.75*	*.95*	*1.25*

Wrt Barrel Japd.....80@80&10%
Wrt " Bronzed....50@50&10%
Wrt. Spring...70&10@70&10&10%
Wrt. Shutter.....50&5@50&10&5%
Wrt. Square Neck.....75@75&10%
Wrt Square.66⅔&10@66⅔&10&10%
Ives' Patent Door.....60%

Plow and Stove—

Plow .....65&10&10@70%
Stove .....87½&10@—

Tire—

Norway Iron.....80%
Norway Iron.....80%
American Screw Company:
Norway Phila., list Oct. 16, '84..80%
Eagle Phila., list Oct. 16, '84....82½%
Bay State, list Dec. 28, '99.....80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Eclipse, list Dec. 28, '99.....80%
Mount Carmel Bolt Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84....82½%
Mount Carmel, list Dec. 28, '99...80%
Russell, Burdsall & Ward Bolt & Nut Co.:
Empire, list Dec. 28, '99.....80%
Norway Phila., list Oct., '84.....80%
Upson Nut Co.:
Tire Bolts.....72½%

Borers, Tap—

Borers Tap, Ring, with Handle:

Inch.....	*1¼*	*1½*	*1¾*	*2*
Per doz...	*$4.80*	*5.60*	*6.40*	*8.00*
Inch	*2¼*		*2½*	
Per doz.....	*$6.65*		*11.50*	

Enterprise Mfg. Co., No. 1, $1.25; No. 2, $1.65; No. 3, $2.50 each.....25%

Boxes, Mitre—

C. E. Jennings & Co.....30%
Langdon .....15&10%
Perfection 40%
Seavey 33⅓%
Stanley R. & L. Co.:
Nos. 240 to 460.....30%
Nos. 50 and 60.....35%

Braces—

Common Ball,American..$1.25@1.30
Barber's .....50&10&10@60&10%
Fray's Genuine Spofford's.....60%
Fray's No. 70 to 120, 81 to 123, 207 to 414 .....60%
C. E. Jennings & Co.....50&5%
Mayhew's Ratchet.....60%
Mayhew's Quick Action Hay Pat....50%
Millers Falls Drill Braces.....25&10%
P., S. & W. Co., Peck's Pat.60@60&5%
Stanley R. & L. Co.:
Stanley 35%
Victor 45%

Brackets—

Wrought Steel...80&10@80&10&5%
Griffin's Pressed Steel.....80@80&10%
Griffin's Folding Brackets.....70&10%
Stowell's Cast Shelf.....75%
Stowell's Sink.....50%
Western, W. G. Co., Wire.....60&10%

Bright Wire Goods—See *Wire and Wire Goods.*

Broilers—

Kilbourne Mfg. Co.....75&20%
Western, W. G. Co.....80%
Wire Goods Co.....75@75&10%

Buckets, Galvanized—

Price per dozen.

Quart.....	*.10*	*.12*	*.14*
Water, Regular...	*1.40*	*1.70*	*1.90*
Water, Heavy....	*3.40*	*3.70*	*3.80*
Fire, Rd. Bottom..	*2.30*	*2.55*	*2.95*
Well	*2.55*	*2.87*	*3.15*

Bucks, Saw—

Hoosier.....℔ gro. $36.00

Bull Rings—See *Rings, Bull*

Butts—Brass—

Wrought, list, Sept., '96..15@—%
Cast Brass, Tiebout's.....50%

Cast Iron—

Fast Joint, Broad....40&10@50%
Fast Joint, Narrow...40&10@50%
Loose Joint.....70&10@75%
Loose Pin.....70&10@75%
Mayer's Hinges.....70@70&5%
Parliament Butts.....70@70&5%

Wrought Steel—

Table and Back Flaps...75%
Narrow and Broad.....75%
Inside Blind.....75%
Loose Pin.....75%
Loose Pin, Jap'd.....70&10%
Loose Pin, Ball and Steeple Tip 85%
Japanned Ball Tip Butts.. 70&10%
Bronzed, Wrt., Nar. and Inside Blind Butts....55&10%

Cages, Bird—

Hendryx, Brass:
3000, 5000, 1100 series.....5%
1200 series.....33⅓%
200, 300, 600 and 900 series.....60&10%
Hendryx Bronze:
700, 800 series.....40&10%
Hendryx Enameled.....40&10%

Calipers—See *Compasses.*

Calks, Toe and Heel—

Blunt, 1 prong.....per lb.4@4½ ¢
Sharp, 1 prong...per lb., 4½@5 ¢
Burke's Blunt.....4@4½ ¢
Burke's Sharp.....4½@5 ¢

Gaiter, Blunt.....4@4¼¢
Gaiter, Sharp.....4½@4¾¢
Perkins', Blunt Toe.....⅌ lb 3.65¢
Perkins', Sharp Toe.....⅌ lb 4.15¢

Can Openers—
See *Openers, Can.*

Cans, Milk—

	5	8	10 gal.
Illinois Pattern	$1.35	1.85	2.05 each.
New York Pattern	1.50	2.20	2.45 each.
Baltimore Pattern	1.50	2.20	2.45 each.
Dubuque	1.35	1.60	1.75 each.

Cans, Oil—
Buffalo Family Oil Cans:

3	5	10 gal.
$48.00	60.00	129.60 gro., net.

Caps, Percussion—
Eley's E. B.....52@55¢
G. D.....per M 34@35¢
F. I.....per M 40@42¢
G. E.....per M 48@50¢
Musket.....per M 62@63¢

Primers—
Berdan Primers, $2 per M...20%
B. L. Caps (Sturtevant Shells) $2 per M.....20%
All other primers per M.$1.52@1.60

Cartridges—
Blank Cartridges:
32 C. F., $5.50.....10&5%
38 C. F., $7.00.....10&5%
22 cal. Rim, $1.50.....10&5%
32 cal. Rim, $2.75.....10&5%
B. B. Caps, Con. Ball, Swgd. $1.90
B. B. Caps, Round Ball....$1.49
Central Fire.....25%
Target and Sporting Rifle..15&5%
Primed Shells and Bullets.15&10%
Rim Fire, Sporting.....50%
Rim Fire, Military.....15&5%

Casters—
Bed.....70@70&10%
Plate.....60&10@60&10&5%
Philadelphia.....75@75&10%
Acme, Ball Bearing.....33⅓%
Boss.....70&10%
Boss Anti-Friction.....70&10%
Gem (Roller Bearing).....80%
Martin's Patent (Phoenix).....45%
Standard Ball Bearing.....45%
Tucker's Patent low list.....30%
Yale (Double Wheel) low list.....50%

Cattle Leaders—
See *Leaders, Cattle.*

Chain, Coil—
American Coil, Straight Link:

5-16	¼	5-16	⅜	7-16	½	9-16
$8.70	5.90	4.95	4.20	4.05	3.95	3.90
⅝	¾	⅞ to 1	1⅛ to 1¼ inch.			
$3.85	3.70	3.65	3.80			

German Coil.....60&10&10@70%

Halter—
Halter Chains.....60&5@60&10%
German Pattern Halter Chains, list July 2½, '97.....60&10&10%
Covert Mfg. Co,
Halter.....35&5%
Covert's Saddlery Works
Halter.....70%

Cow Ties—
See *Halters and Ties.*

Trace, Wagon, &c.—
Traces, Western Standard: 100 pr.
6½—6-3, Str'ght, with ring.$25.00
6½—6-2, Str'ght, with ring.$26.00
6½—8-2, Str'ght, with ring.$30.00
6½—10-2, Str'ght, with ring.$35.00
NOTE—Add 2c per pair for Hooks. Twist Traces 2c per pair higher than Straight Link.
Eastern Standard Traces, Wagon Chain, &c.....60&10%

Miscellaneous—
Jack Chain, list July 10, '93:
Iron.....60&10&5@70%
Brass.....60&10@60&10&10%
Safety Chain.....75@75&10%
Gal. Pump Chain.....lb. 4@4½%
Covert Mfg. Co.:
Breast, Halter, Heel, Rein, Stallion.....40%
Covert Sad. Works:
Breast, Hold Back, Rein.....70%
Oneida Community:
Am. Dog Leads and Kennel Chains.....40@40&5%
Niagara Dog Leads and Kennel Chains.....45@60&5%
Wire Goods Co.:
Dog Chain.....70&10%
Universal Dbl.-Jointed Chain.....50%

Chain and Ribbon, Sash—
Oneida Community:
Copper Chain.....60&5%
Steel Chain.....60%
Pullman:
Bronze Chain.....60%
Steel Chain.....60&10%
Sash Chain Attachments, per set..8¢
Aluminoy Sash Ribbon, per 100 ft.....$1.25@$3.00
Sash Ribbon Attachments, per set.8¢

Chalk—(From Jobbers.)
Carpenters' Blue.....gro. 38@40¢
Carpenters' Red.....gro. 33@35¢
Carpenters' White....gro. 28@30¢
See also Crayons.

Checks, Door—
Barnsley's.....45%
Eclipse.....60&10%
Pullman, per gro.....$54.00
Ruswin.....40%

Chests, Tool—
American Tool Chest Co.:
Boy's Chests, with Tools.....55%
Youths' Chests, with Tools..40%
Gentlemen's Chests, with Tools..30%
Farmers', Carpenters', etc., Chests, with Tools.....20%
Machinists' and Pipe Fitters' Chests, Empty.....50%
Tool Cabinets.....50%
C. E. Jennings & Co.'s Machinists' Tool Chests.....33⅓&10%

Chisels—
Socket Framing and Firmer
Standard List.....75@75&10%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Socket Firmer No. 10.....60%
C. E. Jennings & Co. Socket Framing No. 15.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
L. & I. J. White.....30@30&5%
L. & I. J. White, Tanged.....25&5%

Tanged—
Tanged Firmers.....33 1-3@40%
Buck Bros.....30%
Charles Buck.....30%
C. E. Jennings & Co. Nos. 191, 181..25%

Cold—
lb.
Cold Chisels, good quality..13@15¢
Cold Chisels, superior quality..11@12¢
Cold Chisels, ordinary... 9@10¢

Chucks—
Almond Drill Chucks.....35%
Almond Turret Six-Tool Chuck....35%
Beach Pat., each $8.00.....35&5%
Empire.....25%
Blacksmiths'.....25%
Jacobs' Drill Chucks.....35%
Pratt's Positive Drive.....25%
Skinner Patent Chucks:
Independent Lathe Chucks.....50%
Universal.....50%
Combination.....50%
Drill Chucks, New Model.....30%
Drill Chucks, Standard.....45%
Drill Chuck, Skinner Pat., all sizes.35%
Drill Chucks, Positive Drive.....30%
Planer Chucks.....25%
Face Plate Jaws.....40%
Standard Tool Co.:
Improved Drill Chuck.....45%
Union Mfg. Co.:
Combination.....50%
Czar Drill.....35%
Combination Geared Scroll.....40%
Geared Scroll.....40%
Independent.....50%
Independent Steel.....40%
Union Drill.....45%
Universal.....50%
Independent Iron F. Plate Jaws.40%
Independent Steel F. Plate Jaws.40%
Westcott Patent Chucks:
Lathe Chucks.....50%
Little Giant Auxiliary Drill.....50%
Little Giant Double Grip Drill..50%
Little Giant Drill, Improved.....50%
Oneida Drill.....50%
Scroll Combination Lathe.....50%

Clamps—
Adjustable, Hammers'.....20@20&5%
Cabinet, Sargent's.....50&10%
Carriage Makers', P., S. & W. Co.....40&10@50%
Carriage Makers', Sargent's.....60%
Besly, Parallel.....33⅓&10%
Lineman's, Utica Drop Forge & Tool Co.....40%
Wood Workers, Hammers'.....40&10%
Saw Clamps, see Vises, Saw Filers'.

Cleaners, Drain—
Iwan's Champion, Adjustable.....55%
Iwan's Champion, Stationary.....47%

Sidewalk—
Star Socket, All Steel..⅌ doz. $4.05 net
Star Shank, All Steel..⅌ doz. $3.24 net
W. & C. Shank, All Steel, ⅌ doz., 7½ in., $3.00; 8 in., $3.25.

Cleavers, Butchers'—
Foster Bros.....30%
New Haven Edge Tool Co.'s.....45%
Fayette R. Plumb.....30%
L. & I. J. White.....30%

Clippers, Horse and Sheep—
Chicago Flexible Shaft Company:
'98 Chicago Horse, each....$8.75
1902 Chicago Horse, each..$10.75
20th Century Horse, each..$5.00
Lightning Belt Horse, each.$15.00
Chicago Belt Horse, each.$20.00
Stewart's Enclosed Gear Horse, each.....$6.75
Stewart's Patent Sheep Shearing Machine, each.....$12.75
} 25%

Clips, Axle—
Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire
—See *Wire, &c.*

Cocks, Brass—
Hardware list:
Compression, Plain Bibbs, Globe, Kerosene, Racking, &c., Cocks.....75@75&5%

Coffee Mills—
See *Mills, Coffee.*

Collars, Dog—
Nickel Chain, Walter B. Stevens & Son's list.....40%
Leather, Walter B. Stevens & Son's list.....40%

Combs, Curry—
Metal Stamping Co.....40%

Mane and Tail—
Covert's Saddlery Works.....60&10%

Compasses, Dividers, &c.
Ordinary Goods.....75&5@75&10%
Bemis & Call Hdw. & Tool Co.:
Dividers.....65%
Calipers, Double.....65%
Calipers, Inside or Outside.....65%
Calipers, Wing.....60%
Compasses.....50%
Wm. Schollhorn Co.:
Excelsior Dividers.....60%
Lodi Dividers.....75%

Conductor Pipe,—
L. C. L. to Dealers:

Territory:	*Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper.*
Eastern:			
	70&10 %	*60&7½%*	*50%*
Central:			
	70&10 2½%	*60 %*	*40&10&5%*
Western and S. W.:			
	65&10 %	*50&10&2½%*	*47½%*
So. Western			
	62½&7½%	*50&5%*	*40&10%*
Copper.			*14&16 oz.*
Eastern			*.50&10%*
Central			*.50&7½%*
Southern			*.50&5%*
So. Western			*.50&2½%*

Terms, 60 days; 2% cash 10 days. Factory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each..	2	3	4	6	8
Labrador ...	$1.20	$1.50	$1.80	$2.10	$2.70
Gal.	3	4	6	8	
Iceland, ea..	$1.80	$2.10	$2.40	$3.00	
Gal.	2	3	4	6	8
Galvanized, ea.	$1.85	$2.00	$2.25	$2.90	$3.90
Galvanized, Lined, side handles, Gal.	2	3	4	6	8
Each	$1.95	$2.15	$2.40	$3.30	$1.15
White Enameled					25%
Agate Lined					25%

Coopers' Tools—
See *Tools, Coopers'.*

Coppers' Soldering—
Soldering Coppers, 3 lbs. to pair and heavier, 23@24¢; lighter than 3 lbs. to pair.....25@26¢

Cord—Sash—
Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8 to 12, 2½¢; No. 7, 2½¢; No. 6, 2½¢.
Cable Laid Italian.....lb., A, 18¢; B, 16¢
Common India.....lb. 10@10½¢
Cotton Sash Cord, Tw'ted. 17@19¢
Patent Russia.....lb...@14¢
Cable Laid Russia....lb...@15¢
India Hemp, Braided..lb...@18¢
India Hemp, Twisted..lb. 12@13¢
Patent India, Twisted.lb. 12@13¢
Anniston Cordage Co.: ⅌ doz., 50 ft., Oriole, $2.00; 50 ft., Columbia, $0.85; 50 ft., Victors, $1.00; 50 ft., 6-Thread, $1.10; 60 ft., 3-Thread, $0.95; 50 ft., Manila, $1.40; 60 ft., Jute, $0.75.
Pearl Braided, cotton, No. 6, ⅌ lb. 24½¢; No. 7, 23½¢; Nos. 8 to 12, 23¢
Eddystone Braided, Nos. 8, 9 and 10, 25¢; 7, 25½¢; 6, 26½¢.
Harmony Cable Laid Italian, Nos. 7 to 10.....⅌ lb 23 ¢
Peerless:
Cable Laid Italian.....16 ¢
Cable Laid Russian.....14 ¢
Cable Laid India.....12 ¢
Braided India.....18 ¢
Pullman:
Wire Sash Cord.....10%
Sash Cord Attachments, per doz.10¢
Samson, Nos. 8 to 12:
Braided, Drab Cotton.....⅌ lb 40 ¢
Braided, Italian Hamp....⅌ lb 40 ¢
Braided, Linen.....⅌ lb 55 ¢
Braided, White Cotton or Spot....⅌ lb 35 ¢
Massachusetts, White.....⅌ lb 30 ¢
Massachusetts, Drab.....⅌ lb 35 ¢
Phoenix, White, Nos. 8 to 12, 27¢; No. 7, 27½¢; No. 6, 28½¢.
Silver Lake:
A, Drab.....45 ¢
A, White.....40 ¢
B, Drab.....40 ¢
B, White.....35 ¢
Italian Hemp.....40 ¢
Linen.....57½¢
See also Chain and Ribbon.

Wire, Picture—
List Oct., '00.....85&10&10@85&10&10&5%
Hendryx Standard Wire Picture Cord.....85&10%

Cradles—
Grain.....40&12½%

Crayons—
White Round Crayons, gr. 6@6½¢
Cases, 100 gro., $5.00 at factory.

D. M. Steward Mfg. Co.:
Genuine. Per gro.
Round Pencil, $2.25; Square Pencil, $1.75; Flat Crayon, $2.50; Metal Workers' Crayon, $3.00; Rolling Mill Crayon, $3.00.
} Case lots, 20%

Compo. Per gro.
Round Pencil, $1.50; Square Pencil, $1.50; Flat Crayon, $1.50; Metal Workers' Crayon, $2.50; Rolling Mill Crayon, $2.50; Railroad Crayon, $4.00; Compo. Crayon, $4.00.
} Case lots, 50&20%

Zelnicker's Lumber:
Red, Blue, Green.....⅌ gro. $6.50
Black.....⅌ gro. $4.00
See also Chalk.

Crooks, Shepherds'—
Fort Madison, Heavy.....⅌ doz. $7.00
Fort Madison, Light.....⅌ doz. $6.50

Crow Bars—See *Bars, Crow.*

Cultivators—
Victor Garden.....50%

Cutlery, Table—
International Silver Company:
No. 12 M'd'm Knives, 1847.⅌ doz. $3.50
Star, Eagle, Rogers & Hamilton and Anchor.....⅌ doz. $3.00
Wm. Rogers & Son.....⅌ doz. $2.50

Cutters—Glass—
H. H. Mayhew Co.....40%
Red Devil.....50%
Smith & Hemenway Co.....50%
Woodward.....40%

Meat and Food—
American.....30%

Nos.	1	2	3	4	5
Each	$5	$7	$10	$25	$50 $60
Enterprise.....25@25&7½%					
Nos.	5	10	12	22	32
Each	$2	$3	$2.75	$4.50	$6

Dixon's.....⅌ doz. 40@50%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Ideal.....40&10@50%
Little Giant.....⅌ doz. 40@50%

Nos.	305	310	312	320	322
	$35.00	$48.00	$44.00	$72.00	$68.00

N. E. Food Choppers.....25%
New Triumph No. 605, ⅌ doz. $24.00.....40@50%
Russwin Food, No. 1, $24.00; No. 2, $27.00.....45&10&10%
Woodruff's.....⅌ doz. 40@50%

Nos.	100	150
	$15.00	$18.00

Enterprise Beef Shavers.....25@30%

Slaw and Kraut—
Henry Disston & Sons:
Slaw, Corn Grater, &c.....40%
Kraut Cutters, 24 x 7, 26 x 8, 30 x 9.....55%
Kraut Cutters, 36 x 12, 40 x 12....40%
J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife....⅌ doz. $3.00
Combined Slaw Cutter and Corn Grater.....⅌ doz. $4.00
Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%
Slaw Cutters, 1 Knife..⅌ gr. $18@$20
Slaw Cutters, 2 Knife..⅌ gr. $22@$30

Tobacco—
All Iron, Cheap..doz. $4.25@$4.50
Enterprise.....25@30%
National, ⅌ doz., No. 1, $21; No. 2, $18.....40%
Sargent's, ⅌ doz., No. 2.....60%
Sargent's, Nos. 12 and 21.....60&10%

Washer—
Appleton's, ⅌ doz., $16.00....50&10&10%

Diggers, Post Hole, &c.—
Dalbey Post Hole Auger..per doz., $9.00
Iwan's Imp'ved Post Hole Auger.40&5%
Iwan's Vaughan Pattern Post Hole Augers.....⅌ doz. $6.25
Iwan's Perfection Post Hole Digger..⅌ doz. $8.25
Iwan's Split Handle Post Hole Diggers.....⅌ doz. $7.25
Kohler's Universal.....⅌ doz. $14.00
Kohler's Little Giant.....⅌ doz. $12.00
Kohler's Hercules.....⅌ doz. $10.00
Kohler's Invincible.....⅌ doz. $9.00
Kohler's Rival.....⅌ doz. $8.00
Kohler's Pioneer.....⅌ doz. $7.00
Never-Break Post Hole Diggers, ⅌ doz., $24.00.....60%
Samson, ⅌ doz. $34.00.....25%

Dividers—See *Compasses.*

Drawers, Money—
Tucker's Pat. Alarm Till No. 1, ⅌ doz., $18; No. 2, $15; No. 3, $12; No. 4, $18.

Drawing Knives—
See *Knives, Drawing.*

Dressers, Emery Wheel—
Diamond Emery Wheel Dressers....35%
Diamond Wheel Dresser Cutters....35%

Drills and Drill Stocks—
Common Blacksmiths' Drill, each.....$1.50@$1.75
Breast, Millers Falls.....15&10%
Breast, P., S. & W.....40%
Goodell Automatic Drills..40&5@40&10%
Johnson's Automatic Drills, Nos. 2 and 3.....16⅔%
Johnson's Drill Points.....16⅔%
Millers Falls Automatic Drills.33⅓&10%
Ratchet, Curtis & Curtis.....25%
Ratchet, Parker's.....40%
Ratchet, Weston's.....40%
Ratchet, Weston's, Style H Improved.....40%
Ratchet, No. 012.....40%
Ratchet, Whitney's, P., S. & W..50%
Whitney's Hand Drill, No. 1, $10.00; Adjustable, No. 10, $12.00.....33⅓%

Twist Drills—
Bit Stock.....60&10&10@70%
Taper and Straight Shank.... 60&10@60&10&5%

Drivers, Screw—
Screw D'ver Bits, per doz..45@50¢
Balsey's Screw Holder and Driver, ⅌ doz., 2½-in., $6; 4-in., $7.50; 6-in., $9.....50%
Buck Bros.' Screw Driver Bits.....30%
Champion.....50%
Edson.....60%
Fray's Hol. H'dle Sets, No. 3, $12...50%
Gay's Double Action Ratchet.....35%
Goodell's Auto..50&10&10@50&10&10&5%
Hurwood.....40%
Mayhew's Black Handle.....40%
Mayhew's Monarch.....40&10%
Millers Falls, Nos. 20 and 21...25&10%
Millers Falls, Nos. 11, 12, 41, 42..15&10%
New England Specialty Co.....50&10%
Sargent & Co.'s:
Nos. 1 and 60.....50&10&10%
Nos. 50, 53 and 55.....60&10%
Nos. 20 and 40.....70&10%
Smith & Hemenway Co.....40&5%
H. D. Smith & Co.'s Perfect H'dle.40%
Stanley R. & L. Co.'s:
No. 64, Varn. Handles.....65%
No. 86.....75%
Victor.....55%
Defiance.....70%
Swan's:
Nos. 7565 to 7568.....50%
No. 7540.....40&10%

Eave Trough, Galvanized—

Territory.	*L. C. L. Galvanized Galv. Steel.*	*Charcoal Iron.*	*Copper.*
Eastern:			
	80&2½%	*70&7½%*	*50%*
Central:			
	75&10&7½%	*70%*	*40&10&5%*
Western and S. W.:			
	70&20&7½%	*60&15&2½%*	*47½%*
So. Western:			
	70&20%	*65&2½%*	*40&10%*

Terms.—2% for cash. Factory shipments generally delivered.
See also Conductor Pipe and Elbows.

Elbows and Shoes—
Factory shipments, all territories:
Galv. Steel and Galv. C. I.
Gauge.....60&10%
No. 26.....50%
No. 24.....25%
No. 22.....10%
Copper.....50%

Elbows, Stove Pipe—
Dover, one piece.....40%
Perfect Elbows (R. M. Co.).....40%

Emery, Turkish—
½ to ⅛ 5½ to 220 Flour.
Kegs.....lb. 5 ¢ 5¼¢ 5½¢
½ Kegs.....lb. 5¼¢ 5¾¢ 5¾¢

¼ Keys....lb. 5½¢ 6 ¢ 4 ¢
10-lb. cans, 10 in case....6½¢ 7 ¢ 6 ¢
10-lb. cans, less than 10.....10 ¢ 10 ¢ 8 ¢
Less quantity..10 ¢ 10 ¢ 8 ¢
NOTE.—In lots 1 to 3 tons a discount of 10% is given.

Extractors, Lemon Juice
—See *Squeezers, Lemon.*

Fasteners, Blind—
Zimmerman's .....50&10%
Waring's .....40&10%

Cord and Weight—
Ives 40%

Faucets—
Cork Lined.....50@50&10%
Metallic Key, Leather Lined.. 60&10@70%
Red Cedar.....40&10@50%
Petroleum .....70&10@75%
B. & L. B. Co.:
Metal Key.....60&10%
Star 60%
West Lock.....50&10%
John Sommer's Peerless Tin Key....40%
John Sommer's Boss Tin Key.....50%
John Sommer's Victor Mtl. Key..50&10%
John Sommer's Duplex Metal Key..60%
John Sommer's Diamond Lock.....40%
John Sommer's I.X.L. Cork Lined..50%
John Sommer's Reliable Cork Lined.. 50&10%
John Sommer's Chicago Cork Lined.60%
John Sommer's O. K. Cork Lined...50%
John Sommer's No Brand, Cedar....50%
John Sommer's Perfection, Cedar....40%
McKenna, Brass:
Burglar Proof, N. P.....25%
Improved, ⅞ and ⅞ inch.....25%
Self Measuring:
Enterprise, ℔ doz. $36.00.....40&10%
Lane's, ℔ doz. $36.00.....40&10%
National Measuring, ℔ doz. $36.40&10%

Felloe Plates—
See *Plates, Felloe.*

Files— Domestic—
List revised Nov. 1, 1899.
Best Brands.....70&10@75&10%
Standard Brands.75&10@75&10&10%
Lower Grade....75&10&10@80&10%

Imported—
Stubs' Tapers, Stubs' list, July 24, '97.....33 1-3@40%

Fixtures, Fire Door—
Richards Mfg. Co.:
Universal, No. 103.....$3.75
Special, No. 104.....$3.75
Fusible Links, No. 96.....50%
Expansion Bolts, No. 107.....60&10%

Grindstone—
Net Prices:

	Inch	*Per doz.*
	15	$3.25
	17	3.75
	19	4.25
	21	4.75

P., S. & W. Co.....30&10@40%
Reading Hardware Co.....60%
Sargent's 70%
Stowell's Giant Grindstone Hanger.. ℔ doz. $6.00
Stowell's Grindstone Fixtures, Extra Heavy .....50&10&10%
Stowell's Grindstone Fixtures, Light.. 60&10%

Fodder Squeezers—
See *Compressors.*

Forks—
NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.
Iowa Dig-Ezy Potato.....60&10%
Victor, Hay.....60&15&2½%
Victor, Manure.....66⅔%
Victor, Header.....65%
Champion, Hay.....66⅔%
Champion, Header.....65%
Champion, Manure.....60&15&2½%
Columbia, Hay.....60&20%
Columbia, Manure.....70%
Columbia, Spading.....70&12½%
Hawkeye Wood Barley.....40%
W. & C. Potato Digger.....60&10%
Acme Hay.....60&20%
Acme Manure, 4 tine.....60&10&5%
Dakota Header.....60&20%
Jackson Steel Barley.....60&20%
Kansas Header.....65%
W. & C. Favorite Wood Barley.....40%
Plated.—See Spoons.

Frames— Saw—
White, S'g't Bar, per doz.75@80¢
Red, S'g't Bar, per doz..$1.00@1.25
Red, Dbl. Brace, per doz.$1.40@1.50

Freezers, Ice Cream—

Qt.	*1*	*2*	*3*	*4*	*6*
Each	*$1.30*	*$1.60*	*$1.90*	*$2.20*	*$2.80*

Fruit and Jelly Presses—
See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Fuse— *Per 1000 Feet.*
Hemp $2.75
Cotton 3.20
Waterproof Sgl. Taped..3.65
Waterproof Dbl. Taped..4.40
Waterproof Tpl. Taped..5.15
} 25¢ @ 10&2½%

Gates, Molasses and Oil—
Stebbins' Pattern.....80&10%

Gauges—
Marking, Mortise, &c..50&10@60%
Chapin-Stephens Co.:
Marking, Mortise, &c.50&10@50&10&10%
Scholl's Patent.....50&10@50&10&10%
Door Hangers.....50@50&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge.....35%
Marking and Mortise.....60%
Wire, Brown & Sharpe's.....25%
Wire, Morse's.....25%
Wire, P., S. & W. Co.....33⅓%

Gimlets— Single Cut—
Numbered assortments, per gro.
Nail, Metal, No. 1, $2.00; 2, $2.30
Spike, Metal, No. 1, $4.00; 2, $4.30
Nail, Wood Handled, No. 1, $2.50; 2, $2.60
Spike, Wood Handled, No. 1, $4.50; 2, $4.60

Glass, American Window
See *Trade Report.*

Glasses, Level—
Chapin-Stephens Co.....60@60&10&10%

Glue, Liquid Fish—
Bottles or Cans, with Brush.. 25&10@50%
International Glue Co. (Martin's)..40%

Grease, Axle—
Common Grade....gro. $4.50@6.00
Dixon's Everlasting..10-lb pails, ea. 85¢
Dixon's Everlasting, in boxes, ℔ doz. 1 lb, $1.20; 2 lb, $2.00
Helmet Hard Oil.....25%

Griddles, Soapstone—
Pike Mfg. Co.....33⅓@33⅓&10%

Grindstones—
Bicycle Emery Grinder.....$6.50
Bicycle Grindstones, each.....$2.50@3.00
Pike Mfg. Co.:
Improved Family Grindstones, per inch, ℔ doz.....$2.00 } 33⅓%
Pike Mower and Tool Grinder, each .....$6.00 }
Velox Ball Bearing, Mounted, Angle Iron Frames, each.....$3.00

Grips, Nipple—
Perfect Nipple Grips.....40&10&2%

Halters and Ties—
Cow Ties.....60&10@60&10&5%
Covert Mfg. Co.:
Web 45%
Jute Rope.....45%
Sisal Rope.....33⅓%
Cotton Rope.....45%
Hemp Rope.....45%
Covert's Saddlery Works:
Web and Leather Halters.....70%
Jute and Manila Rope Halters....70%
Sisal Rope Halters.....60&20%
Jute, Manila and Cotton Rope Ties 70%
Sisal Rope Ties.....60&10%
Oneida Community:
Am. Coil and Halters.....40@40&5%
Am. Cow Ties.....45@50%
Niagara Coil and Halters..45@50&5%
Niagara Cow Ties....45&5@50&10&5%
E. T. Rugg & Co.:
Leather Halters.....50%
Web Halters and Webbing.....60%
Jute and Sisal Rope Halters.....60%
Jute and Sisal Horse and Cattle Ties 60%
Cotton Horse Ties.....60%
Livery Ties, Braided.....60%

Hammers—
Handled Hammers—
Heller's Machinists'...40&10@40&10&10%
Heller's Farriers.....40&10@40&10&10%
Magnetic Tack, Nos. 1, 2, 3, $1.25, $1.50, $1.75.....50%
Peck, Stow & Wilcox, Steel.....50%
Fayette R. Plumb:
Plumb, A. E. Nail..... 33⅓&7½@33⅓&10&7½%
Engineers' and B. S. Hand..... 50&7½&5@50&10&7½&5%
Machinists' Hammers.50&5@50&10&5%
Riveting and Tinners'..... 40&2½@40&10&2½%
Sargent's C. S. New List.....40%

Heavy Hammers and Sledges—
Under 3 lb., per lb., 50¢....80&10%
3 to 5 lb., per lb., 40¢.....80&10%
Over 5 lb., per lb., 30¢..80&10&10%
Wilkinson's Smiths'...lb. 9½@10¢

Handles—
Agricultural Tool Handles
Axe, Pick, &c....60&10@60&10&5%
Hoe, Rake, &c.....45@50%
Fork, Shovel, Spade, &c.:
Long Handles.....45@50%
D Handles.....50@50&5%

Cross-Cut Saw Handles—
Atkins' 40%
Champion .....45@45&10%
Disston's 50%

Mechanics' Tool Handles—
Auger, assorted...gro. $2.50@$3.00
Brad Awl.....gro. $1.65@$1.75
Chisel Handles:
Apple Tanged Firmer, gro. assorted .....$2.40@$2.65
Hickory Tanged Firmer, gro. assorted .....$2.15@$2.40
Apple Socket Firmer, gro. assorted .....$1.75@$1.95
Hickory Socket Firmer, gro. assorted .....$1.45@$1.60
Hickory Socket Framing, gro. assorted .....$1.60@$1.75
File, assorted.....gro. $1.30@$1.40
Hammer, Hatchet, &c. 60&10@60&10&5%
Hand Saw, Varnished, doz. 80&85¢; Not Varnished...65@75¢
Plane Handles:
Jack, doz. 30¢; Jack, Bolted.75¢
Fore, doz. 45¢; Fore, Bolted.90¢
Chapin-Stephens Co.:
Carving Tool.....40@40&10%
Chisel .....65@65&10%
File and Awl.....65@65&10%
Saw and Plane.....40@40&10%
Screw Driver.....40@40&10%
Millers Falls Adj. and Ratchet Auger Handles .....15&10%
Nicholson Simplicity File Handle.... ℔ gro. $0.85@$1.50

Hangers—
NOTE—Barn Door Hangers are generally quoted per pair, without track, and Parlor Door Hangers per double set with track, &c
Allith Mfg. Co.:
Reliable, No. 1.....per doz. $2.00
Reliable, No. 2.....per doz. $3.00
Chicago Spring Butt Co.:
Friction 25%
Oscillating 25%
Big Twin.....25%
Chisholm & Moore Mfg. Co.:
Baggage Car Door.....50%
Elevator 30%
Railroad 50%
Cronk & Carrier Mfg. Co.:
Loose Axle.....60&10%
Roller Bearing.....70%
Griffin Mfg. Co.:
Solid Axle, No. 19, $12.00.....70%
Roller Bearing, No. 11, $15.00.70%
Roller Bearing, Ex. Hy., No. 22, $18.00.....70%
Hinged Hangers, $16.00....60&10%
Lane Bros. Co.:
Parlor, Ball Bearing.....$4.00
Parlor, Standard.....$3.15
Parlor, No. 105.....$2.85
Parlor, New Model.....$2.80
Parlor, New Champion.....$2.25
Barn Door, Standard.....60&5%
Hinged.....net $6.40
Covered .....60&2%
Special .....70&5%
Lawrence Bros.:
Advance .....60&10%
Cleveland 75%
Clipper, No. 75.....60%
Crown .....60&10%
Easy Parlor Door, Dbl. Sets, $2.50; Single Sets, $1.25.
Giant .....60&5%
Hummer .....70&5%
New York.....60&10%
Peerless 75%
Sterling .....60&10%
McKinney Mfg. Co.:
No. 1, Special, $15.....60&10%
No. 2, Standard, $18.....60&10%
Hinged Hangers, $16.....50%
Meyers' Stayon Hangers.....60&5%
Richards Mfg. Co.:
Pioneer Wood Track No. 3..$2.00
Ball B'r'g St'l Track No. 10,50&10%
Roller B'r'g St'l Track No. 12,$2.15
Roller B'r'g St'l Track No. 13,$2.30
Hero, Adj. Track No. 19..50&10%
Adjustable Track Tandem Trolley Track No. 16.....50&10%
Seal, Steel Track No. 8.....$2.25
Auto Adj. Track No. 22..50&10%
Trolley B. D. No. 17.....$1.25
Trolley F. D. No. 120.....$2.10
Trolley F. D. No. 121.....$2.25
Trolley F. D. No. 150.....$2.35
Safety Underwriters F. D. No. 101 .....50%
Tandem No. 44..2½ and 3 60&10%
Palace, Adjustable Track No. 132 .....50&10%
Royal, Adjustable Track No. 122 .....50&10%
Ives' Wood Track No. 1.....$2.00
Trolley B. D. No. 20.....50&10%
Trolley B. D. No. 24.....$1.30
Trolley B. D. No. 27.....$1.40
Trolley B. D. No. 28.....$1.60
Roller Bearings Nos. 39, 41, 43 .....75%
Anti-friction No. 42.....60&20%
Hinged Tandem No. 48....60&5%
Folding Door B. B. Swivel No. 135 .....40%
Safety Door Hanger Co.:
Storm King Safety.....60%
U. S. Standard Hinge.....60%
Stowell Mfg. & Foundry Co.:
Acme Parlor Ball Bearing....40%
Ajax Hinge Door.....60%
Apex Parlor Door.....50&10&5%
Atlas 60%
Baggage Car Door.....50%
Climax Anti-Friction.....50&10%
Elevator 40%
Express 50%
Freight Car Door.....60%
Interstate .....60&10%
Lundy Parlor Door.....50&10%
Magic 60%
Matchless .....60&10%
Nansen .....70&5%
Parlor Door.....50&10%
Railroad .....50&10%
Rex Hinge Door.....60%
Street Car Door.....50%
Steel, Nos. 300, 404, 500....50&10%
Underwriters' Fire Door.....40%
Wild West Warehouse Door..50%
Zenith for Wood Track....50&10%
A. L. Sweet Iron Works:
Check Back.....70%
Climax Anti-Friction.....50&10%
Eagle 70%
Hylo Hinge.....60%
New Perfection.....60%
Pilot 60%
Pilot Hinge.....60%
Rider Wooster.....65%
Western Pattern.....70%
Taylor & Boggis F'y Co.'s Kidder's Roller Bearing.50&15&10&5%
Wilcox Mfg. Co.:
Bike Roller Bearing..℔ doz. $5.00
C. J. Roller Bearing.....60&10%
Cycle Ball Bearing.....50%
Dwarf Ball Bearing.....40%
Ives, Wood Track.....60&10%
L. T. Roller Bearing....60&10&5%
New Era Roller Bearing..50&10%
O. K. Roller Bearing..60&10&5%
Prindle, Wood Track.....60%
Richards' Wood Track.....60%
Richards' Steel Track.....50&10%
Spencer Roller Bearing....60&10%
Tandem, Nos. 1 and 2.....60%
Underwriters' Roller Bearing..40%
Velvet 50%
Wilcox Auditorium Ball B'r'g.20%
Wilcox Barn Trolley No. 123..40%
Wilcox Elv. Door, Nos. 112 and 122½.....50%
Wilcox Elv. Door, No. 132....40%
Wilcox Fire Trolley, Roller Bearing.....30%
Wilcox Le Roy Noiseless Ball Bearing 40%
Wilcox New Century..50&10&10%
Wilcox O. K. Steel Track....50%
Wilcox O. K. Trolley.....50%
Wilcox Trolley Ball Bearing..40%
Wilcox Wideman Narrow Gauge Ball Bearing.....40%
For Track, see Rail.

Hangers— Garment—
Pullman Trouser, ℔ gro., 1 pair Flat Aluminoy, $9.00; 1 pair Round Nickeled, $9.00; 4 pair Round Nickeled.. $27.00
Victor Folding.....℔ gro. $9.00
Western, W. G. Co.....70&10%

Extra 5&10% often given.

Gate—
Myers' Patent Gate Hangers, ℔ doz. net $4.80

Joist and Timber—
Lane Bros. Co.....30%

Hasps—
Griffin's Security Hasp.....50%
McKinney's Perfect Hasp, ℔ doz..50%

Hatchets—
Regular list, first quality....50%
Second quality $1.00 per doz. less than first quality.

Heaters, Carriage—
Clark, No. 5, $1.75; No. 5B, $2.00; No. 3, $2.25; No. 3D, $2.75; No. 7D, $3.00; No. 3E, $3.25; No. 1, $3.50.....15%
Clark Coal, ℔ doz. $0.75.....10%

Hinges—
Blind and Shutter Hinges—
Surface Gravity Locking Blind: (Victor; National; 1868 O. P.; Niagara; Clark's O. P.; Clark's Tip; Buffalo.)

No.	*1*	*3*	*5*
Doz. pair	*$0.75*	*1.35*	*2.70*

Mortise Shutter: (L. & P., O. S., Dixie, &c.)

No.	*1*	*1½*	*2*	*2½*
Doz. pair	*$0.70*	*.65*	*.60*	*.55*

Mortise Reversible Shutter (Buffalo, &c.):

No.	*1*	*1½*	*2*
Doz. pair	*$0.70*	*.65*	*.60*

North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%
Charles Parker Co.....70@75%
Parker Wire Goods Co.:
Hale & Benjamin Automatic Blind Hinges 20%
Hale's Blind Awning Hinges, No. 110, for wood, $9.00; No. 111, for brick, $9.00.....20%
Reading's Gravity.....60%
Sargent's, Nos. 1, 3, 11 and 13..75&10%
Stanley's Steel Gravity Blind Hinges, ℔ doz. sets, without screws, $0.90; with screws, $1.20.
Wrightsville Hardware Co.:
O. S., Lull & Porter.....75&10&5%
Acme, Lull & Porter.....75&10%
Queen City Reversible.....75&10%
Shepard's Noiseless, Nos. 60, 65, 55 .....75&10%
Niagara, Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
1868, Old Pat'n, Nos. 1, 3 & 5..... 75&10&5%
Tip Pat'n, Nos. 1, 3 & 5.....75&10&5%
Buffalo Gravity Locking, Nos. 1, 3 & 5.....75&10&5%
Shepard's Double Locking, Nos. 20 & 25.....70%
Champion Gravity Locking, No. 75.75%
Steamboat Gravity Locking, No. 10.75%
Pioneer, Nos. 060, 45 & 5½.....75%
Empire, Nos. 101 & 103.....70%
W. H. Co.'s Mortise Gravity Locking, No. 2.....60%

Gate Hinges—
Clark's or Shepard's—Doz. sets:

No.	*1*	*2*	*3*
Hinges with L't'chs.	*$2.00*	*2.70*	*5.00*
Hinges only	*1.40*	*2.05*	*3.80*
Latches only	*.70*	*.70*	*.35*

New England:

With Latch....doz....	*@$2.00*	
Without Latch..doz....	*@$1.60*	

Reversible Self-Closing:

With Latch.....doz....	*@$1.75*	
Without Latch..doz....	*@$1.35*	

Western:

With Latch.....doz.	*$1.75*	
Without Latch.....doz.	*$1.15*	

Wrightsville Hardware Co.:
Shepard's or Clark's, doz. sets,

Nos.	1	2	3
Hinges with Latches..	$2.00	2.70	5.00
Hinges only	1.40	2.05	3.80
Latches only	.70	.70	1.35

Pivot Hinges—
Bommer Bros. Pivot.....40%
Lawson Mfg. Co. Matchless.....45%

Spring Hinges—
Holdback, Cast Iron...$6.50@$7.00
Non-Holdback, Cast Iron$6.25@$6.75
J. Bardsley:
Bardsley's Non-Checking Mortise Floor Hinges.....45%
Bardsley's Patent Checking..15%
Bommer Bros.:
Bommer Ball Bearing Floor Hinges 40%
Bommer Spring Hinges.....40%
No. 999 Wrot, Steel Hold Back, ℔ gr. $9.00
Chicago Spring Butt Co.:
Chicago Spring Hinges.....25%
Triple End Spring Hinges....50%
Chicago (Ball Bearing) Floor Hinge 50%
Garden City Engine House....25%
Keene's Saloon Door.....25%
Columbian Hardware Co.:
Acme, Wrought Steel.....30%
Acme, Brass.....25%
American 30%
Columbia, No. 14.....℔ gr. $9.00
Columbia, No. 18.....℔ gr. $25.00
Columbia, Adjustable, No. 7, ℔ gr. $12.00
Gem, new list.....30%
Clover Leaf.....℔ gr. $12.00
Oxford, new list.....30%
Lawson Mfg. Co., Matchless....30%
Richards Mfg. Co.:
Superior Double Acting Floor Hinges 40%
Shelby Spring Hinge Co.:
Buckeye All Steel Holdback Screen Door.....℔ gr. $9.00
Ball Bearing Floor Hinge....50%
Ohio Detachable Screen Door Hinge .....℔ gr. $12.00
The Stover Mfg. Co.:
Ideal, No. 16, Detachable, ℔ gr. $12.50
Ideal, No. 4.....℔ gr. $9.00
New Idea No. 1.....℔ gr. $9.00
New Idea, Double Acting....45%
New Idea Floor.....45%
Van Wagoner:
Ball Bearing.....25%
No. 777 Sh't Steel Holdb'k, ℔ gro. pr. $9

Extra 10% often given on most of these Hinges.

Wrought Iron Hinges—

Strap and T Hinges, &c., list December 20, 1904:

Light Strap Hinges...70%
H'vy Strap H'g's...75&5%
Light T Hinges.....65%
Heavy T Hinges.....60%
Extra H'y T H'g's.70&10%
Hinge Hasps.....50%
Cor. Heavy Strap..75&5%
Cor. Ex. Heavy T.70&10%
} *Extra 10@10&5 %*

Screw Hook and Strap.
6 to 12 in. ..lb. 3¾¢
1¼ to 20 in. ..lb. 3½¢
22 to 36 in. ..lb. 3¼¢

Screw Hook and Eye:
¾ to 1 inch.....lb. 6½¢
⅝-inch.....lb. 7½¢
½-inch.....lb. 8½¢

Hitchers, Stall—

Covert Mfg. Co., Stall Hitchers..30&2%

Hods— Coal—

	Per doz.			
Inch	15	16	17	18
Galv. Open	$2.50	2.75	3.00	3.25
Jap. Open	$1.90	2.10	2.25	2.55
Galv. Funnel	$3.00	3.30	3.60	3.90
Jap. Funnel	$2.45	2.65	2.85	3.30

Masons' Etc.—

Cleveland Wire Spring Co.:
Steel Brick, No. 162.....each $0.95
Steel Mortar, No. 158.....each $1.25

Hoes— Eye—

Scovil and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovil.....33⅓%

Handled—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding No. 1, $2.00; No. 2, $2.25
Ft. Madison Cotton Hoe....70&10&10%
Ft. Madison Crescent Cultivator Hoe, ℔ doz.....70&10%
Ft. Madison Mattock Hoes:
Regular Weight.....℔ doz. 66⅔%
Junior Size.....℔ doz. $4.00
Ft. Madison Sprouting Hoe..℔ doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&7½%
Kretsinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&2%
B. B. 6 in., Cultivator Hoe.....$3.15
B. B., 6½ in.....$3.35
Acme Wedding.....℔ doz., net, $4.35
W. & C. L'tning Shuffle Hoe, ℔ doz. $4.85

Hoisting Apparatus—

See *Machines, Hoisting.*

Holders— Bit—

Angular, ℔ doz. $24.00.....45&10%

Door—

Bardsley's.....45%
Empire.....50%
Pullman.....50%

File and Tool—

Nicholson File Holders and File Handles.....33⅓&40%

Fruit Jar—

Triumph Fruit Jar Holder, ℔ gross, $10.80; ℔ doz.....$1.25

Hones—Razor—

Pike Mfg. Co., Belgian, German and Swaty.....50%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Bird Cage, Sargent's List.....60&10%
Ceiling, Sargent's List, Nos. 29, 32, 33, 129, 132, 133 and 135.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.50&20&10%
Coat and Hat, Sargent's List...50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....65%
Harness, Reading List.....40%
Harness, Stowell's.....60%
School House, Stowell's.....70%

Wire—

Belt.....80&10@..%
Wire C. & H. Hooks:.....
75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King..70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co, Molding.....75%
Wire Goods Co.:
Acme.....60&10%
Chief.....70%
Crown.....75%
Czar.....65%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron—

Box, 6 in., per doz., $1.00; 8 in., $1.25; 10 in., $2.50.
Cotton.....doz. $1.05@$1.25
Wrought Staples, Hooks, &c.—
See Wrought Goods.

Miscellaneous—

Hooks, Bench, see Stops, Bench.
Bush, Light, doz. $4.75; Medium, $5.35; Heavy, $6.25
Grass, best, all sizes, per doz.$1.40
Grass, common grades, all sizes, per doz.....$1.20
Whiffletree.....lb. 5¾@6¢
Hooks and Eyes:
Brass.....60&5@60&10&5%
Malleable Iron.....70@70&10%
Covert Mfg. Co. Gate and Scuttle Hooks.....40%
Covert Saddlery Works' Self Locking Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks, ℔ doz. $3.25 net
Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—

See Nails, Horse.

Horseshoes—

See *Shoes, Horses.*

Hose, Rubber—

Garden Hose, ¾-inch:
Competition.....*ft. 5 @ 6 ¢*
3-ply Guaranteed..*ft. 8 @ 9 ¢*
4-ply Guaranteed..*ft. 10 @11 ¢*
Cotton Garden, ¾-in., coupled:
Low Grade.....*ft. 8 @ 9 ¢*
Fair Quality.....*ft. 10 @11 ¢*

Irons— Sad—

From 4 to 10.....lb. 3 @3½¢
B. B. Sad Irons.....lb. 3½@3½¢
Mrs. Potts', cents per set:

Nos.	50	55	60	65
Jap'd Tops	68	65	78	75
Tin'd Tops	71	68	81	78

New England Pressing.lb. 3¾@4¢

Pinking—

Pinking Irons.....doz. 60¢

Irons, Soldering

See *Coppers.*

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Daisy.....60&10%
Victor.....60%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130...50&10%
Smith & Hemenway Co.'s.....25%

Kettles—

Brass, Spun, Plain.....20@25%
Enameled and Cast Iron—See Ware, Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros.' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....50%

Corn—

Withington Acme, ℔ doz., $2.65; Dent, $2.75; Adj. Serrated $2.20; Serrated, $2.10; Yankee No. 1, $1.50; Yankee No. 2, $1.15.

Drawing—

Standard List.....75@75&10%
C. E. Jennings & Co., Nos. 45, 46..60%
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16⅔%
L. & I. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. $5.75@6.00
Iwan's Sickle Edge.....℔ doz. $9.50
Iwan's Serrated.....℔ doz. $10.00

Mincing—

Buffalo.....℔ gro. $13.00

Miscellaneous—

Farriers'.....*doz. $3.00@3.25*
Westenholm's.....℔ doz. $3.00@3.25

Knobs—

Base, 2½-inch, Birch, or Maple, Rubber Tip.....*gro. $1.25@$1.50*
Carriage, Jap., all sizes.....
gro. 40@45¢
Door, Mineral.....*doz. 65@70¢*
Door, Por. Jap'd.....*doz. 70@75¢*
Door, Por. Nickel..*doz. $2.05@2.15*
Bardsley's Wood Door, Shutters, &c.15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—

See *Belting, Leather—*

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders....50%
Richards Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladles, Melting—

L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—

Regular Tubular, No. 0.....
doz. $4.25@4.50
Lift Tubular, No. 0.....
doz. $4.75@5.00
Hinge Tubular, No. 0.....
doz. $4.75@5.00
Other Styles.....*40@40&5%*

Bull's Eye Police—

No. 1, 2¾-inch.....*$2.75@3.00*
No. 2, 3-inch.....*$3.00@3.25*

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%

Latches— Thumb—

Roggin's Latches, with screw..
doz. 35@40¢

Door—

Cronk & Carrier Mfg. Co., No. 101, ℔ doz. $2.00
Cronk & Carrier Mfg. Co., Latch, Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125.....50&5%
Richards' Trump, No. 127.....$1.50

Leaders, Cattle—

Small.....*doz. 50¢; large, 60¢*
Covert Mfg. Co.:
Cotton, Hemp and Jute, 45%; Sisal, 33⅓%.

Lifters, Transom—

R. & E.....33⅓%

Lines—

Wire Clothes, Nos.	18	19	20
100 feet	$2.25	2.00	1.75
75 feet	$1.75	1.35	1.10

Anniston Waterproof Clothes, 50 ft., ℔ gro., $25.00; Gilt Edge $23.00; Air Line, $23.00; Acme, $18.00; Alabama, $17.00; Empire, $16.00; Advance, $14.00; Eclipse, $13.50; Chicago, $11.50; Standard, $10.50; Columbia, $9.50; Allston, $13.50; Calhoun, $12.00.
Samson Cordage Works:
Solid Braided Chalk, Nos. 0 to 3..40%
Silver Lake Braided Chalk, No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50.....℔ gr. 20%
Masons' Lines, Shade Cord, &c.:
White Cotton, No. 3½, $1.50; No. 4, $2.00; No. 4½, $2.50; Colors, No. 3½, $1.75; No. 4, $2.25; No. 4½, $2.75; Linen, No. 3½, $2.50; No. 4, $3.50; No. 4½, $4.50.....20%
Tent and Awning Lines: No. 5, White Cotton, $7.50; Drab Cotton, $8.50.....20%
Clothes Lines, White Cotton: 50 ft., $2.75; 60 ft., $3.25; 70 ft., $3.75; 75 ft., $4.00; 80 ft., $4.25; 90 ft., $4.75; 100 ft., $5.25.....20%

Locks— Cabinet—

Cabinet Locks...33⅓@33⅓&7½%

Door Locks, Latches, &c.—

NOTE.—Net Prices are very often made on these goods.
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—

Stowell's.....50%

Padlocks—

Wrought Iron....75&10&5@80&6%
Net prices are general.
R. & E. Mfg. Co. Wrought Steel and Brass.....75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass.....62½%
Crescent.....50&10%
Iron.....62½%
Window Ventilating.....60%
Robison Patent Ventilating Sash Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock..25%
Reading.....40%

Machines—Boring—

Com. Upr't, without Augers.$2.00
Com. Ang'l'r, without Augers.$2.25
Swan's Improved.....40&10%
Angular.
Jennings', Nos. 1 and 4.....35&5%
Millers' Falls..... .... 5.75
Snell's, Rice's Pat. 2.50 2.75

Corking—

Reisinger Invincible Hand Power.....
℔ doz. $48.00

Fence—

Williams' Fence Machines....each, $5.50

Hoisting—

Moore's Anti-Friction Differential Pulley Block.....30%
Moore's Hand Hoist, with Lock Brake.....20%

Ice Cutting—

Chandler's.....12½%

Washing—

Boss Washing Machine Co.:	Per doz.
Boss No. 1	$57.00
Boss Rotary	$54.00
Champion Rotary Banner No. 1	$54.00
Standard Champion No. 1	$48.00
Standard Perfection	$26.00
Cint' Square Western	$30.00
Uneeda American, Round	$30.00

Mallets—

Hickory.....45&5@50%
Lignumvitæ.....45&5@50%
Tinners' Hickory and Apple-wood.....*doz. 45&5@50%*

Mangers, Stable—

Swett Iron Works.....50%

Mashers, Vegetable—

Western, W. G. Co., Potato....60&10%

Mats, Door—

Elastic Steel (W. G. Co.), new list.. 50&10%
Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—

See *Picks and Mattocks.*

Milk Cans—See *Cans, Milk.*

Mills, Coffee, &c.—

Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.50&10&60%
Parker's Box and Side.....50&10@60%
Swift, Lane Bros. Co.:.....30%

Mowers, Lawn—

NOTE.—Net prices are generally quoted
Cheapest.....*all sizes, $1.85@2.00*
Cheap.....*all sizes, $2.00@2.50*
Better Grade..*all sizes, $2.50@4.50*

	12	14	16	18-in.
High Grade	$4.50	4.75	5.00	5.25

Continental.....60&5%
Great American.....70%
Great American Ball Bear'g, new list..70%
Quaker City.....70%
Pennsylvania.....60&5%
Pennsylvania, Jr., Ball Bearing....60%
Pennsylvania, Golf.....50%
Pennsylvania Horse.....33⅓&5%
Pennsylvania Pony.....40&5%
Granite State:
Style A, Low Wheel....70&10&10&5%
Style B, Low Wheel.....70&10&5%
Style C, High Wheel.....70&10%
Style D, High Wheel.....70%
Philadelphia:
Styles M., S., C., K., T.....70&5%
Style A, all Steel.....60&5%
Style E, High Wheel.....70&10&5%
Drexel and Gold Coin, special list..50%

Nails—

Wire Nails and Brads, Papered. List July 20, 1899..85&5@85&10%
Cut and Wire, See Trade Report.
Hungarian, Finishing, Upholsterers' &c. See Tacks.

Horse—

Nos.	6	7	8	9	10	
Anchor	23	21	20	19	18	...40&5%
Champlain	28	26	25	24	23	.....50%
Coleman	13	12	12	11	11	.....net
New Haven	23	21	20	19	18	...40&5%
Putnam	23	21	20	19	18	...33⅓%
New Putnam	19	18	17	16	16	..10&10%
Western						℔ lb 8¼¢

Jobbers' Special Brands.....
per lb. 9@10¢

Picture—

	1¼	2	2½	3	3½ in.
Brass H'd.	.45	.55	.60	.70	.. gro
Por. Head	.. 1.10	1.10	1.10	..	gro

Nippers—

See *Pliers and Nippers.*

Nuts—

Cold Punched: *Off list.*
Mfrs. or U. S. Standard.
Square, Blank or Tapped..$4.90
Hexagon, Blank or Tapped.$5.30
Square, Blank, C. & T.....$5.20
Hexagon, Blank, C. & T...$5.90
Hot Pressed:
Mfrs., U. S. or Nar. Gauge Stan'd.
Square, Blank.....$5.30
Hexagon, Blank.....$5.20
Square, Tapped.....$5.20
Hexagon, Tapped.....$5.70

Oakum—

Best.....lb. 6¼@6½¢
U. S. Navy.....lb. 5¾@6¢
Navy.....lb. 4½@5¢
Plumbers' Spun Oakum...2½@3¢
In carload lots ⅛¢ lb. off, f.o.b. New York.

Oil Tanks—See *Tanks, Oil.*

Oilers—

Brass and Copper.....50&10%
Tin or Steel.....70@70&5%
Zinc.....70@70&5%
Chase or Paragon:
Brass and Copper.....50&10%
Tin or Steel.....65&10%
Zinc.....65&10%
Malleable, Hammers' Imp'ed, Nos. 11, 12 and 13.....20%
Malleable, Hammers' Old Pattern, Nos. 1, 2 and 3.....50%
American Tube & Stamping Co.:
Spring Bottom Cans.....70@70&10%
Railroad Oilers, &c.....60@60&10%

Openers— Can— *Per doz.*

Sprague, Iron Handle....30@35¢
Sprague, Wood Handle...35@40¢
Sardine Scissors.....*$1.75@$3.00*
National.....50&10%
Stowell's Sprague.....℔ doz. 35@45¢
Vim Tin Shear and Can Opener, ℔ doz., 75c.; per gro., $7.50

Egg—

Nickel Plate.....℔ doz., $2.00
Silver Plate.....℔ doz., $4.00

Packing—

Asbestos Packing, Wick and Rope.....lb. 15&20¢

Rubber—

(*Fair quality goods.*)

Sheet, C. I.....11@12¢
Sheet, C. O. S.....11@12¢
Sheet, C. B. S.....12@13¢
Sheet, Pure Gum.....40@45¢
Sheet, Red.....40@50¢
Jenkins' '96, ℔ lb 80¢.....25@25&5%

Miscellaneous—

American Packing...lb. 7@10 ¢
Cotton Packing.....lb. 16@25 ¢
Italian Packing.....lb. 9@12½¢
Jute.....lb. 4@ 4½¢
Russia Packing.....lb. 8@11 ¢

Pails, Creamery—

R. M. Co., with gauges—No. 1, $6.25; No. 2, $6.50 ℔ doz.

Pails, Water, Well, &c.—

See *Buckets.*

Pans— Dripping—

Standard List.....65&10%

Fry—

Common Lipped:

Nos.	1	2	3	4	5
Per doz.	$0.75	0.80	0.90	1.10	1.30

Refrigerator, Galva.—

Inch	12	14	16	18
Per doz	$1.95	2.25	2.80	3.15

Roasting and Baking—

Regal, R. M. Co., ℔ doz., Nos. 5, $4.50; 10, $5.25; 20, $5.75; 30, $6.25.
Savory, ℔ doz., net, Nos. 200, $9.00; 400, $15.00.
Simplex, ℔ gro.:

No.	40	50	60	140	150	160
	$30.00	35.00	42.00	34.00	39.00	46.00

Paper—Building Paper

Asbestos:	lb.	
Roll Board or Building Felt, 6 to 30 lb., per 100 sq. ft.	6¢	
Roll Board or Building Felt, 3-32 and ⅛ in., 45 to 60 lbs., per 100 sq. ft.	8¢	*33 1-3%*
Mill Board, Sheet, 40 x 40 in., 1-32 to ½ in.	10¢	

Per roll

Rosin Sized Sheathing: 500 sq. ft.
Light weight, 25 lbs. to roll.....
35@40¢
Medium weight, 30 lbs to roll,
40@45¢
Heavy weight, 40 lbs. to roll..
56@60¢
Black Water Proof Sheathing, 500 sq. ft., 1 ply, 65¢; 2 ply, 85¢; 3 ply, $1.10; 4 ply, $1.25.
Deafening Felt, 9, 6 and 4½ sq. ft. to lb. ton.....$50.00
Red Rope Roofing, 250 sq. ft. per roll.....$1.75

Tarred Paper—

1 ply (roll 300 sq. ft.), ton.....
$32.50@35.50
2 ply, roll 108 sq. ft.....55¢
3 ply, roll 108 sq. ft.....75¢
Slater's Felt (roll 500 sq. ft.)..75¢
R. R. M. Stone Surfaced Roofing (roll 110 sq. ft.).....$2.75

Sand and Emery—

Flint Paper and Cloth.60@60&10%
Garnet Paper and Cloth....25%
Emery Paper and Cl'h.60@60&10%

Parers— Apple—

Advance.....℔ doz. $4.00
Baldwin.....℔ doz. $4.00
Bonanza Improved.....each $6.50
Polar.....℔ doz. $4.00
Dandy.....each $7.50

Eureka Improved.....each $20.00
Family Bay State.....₱ doz. $15.00
Improved Bay State.....₱ doz. $36.00
Little Star.....₱ doz. $5.00
New Lightning.....₱ doz. $7.00
Reading 72.....₱ doz. $3.25
Reading 78.....₱ doz. $6.25
Rocking Table.....₱ doz. $6.20
Turn Table '98.....₱ doz. $6.00
White Mountain.....₱ doz. $5.00

Potato—

Saratoga.....₱ doz. $7.00
White Mountain.....₱ doz. $6.00

Picks and Mattocks—

List Feb. 23, 1899.....75%
Cronk's Handled Garden Mattock, ₱ doz., $6.40.....33⅓%

Pinking Irons—

See *Irons, Pinking.*

Pins, Escutcheon—

Brass.....60@60&10%
Iron, list Nov. 11, '85..60@60&10%

Pipe, Cast Iron Soil—

Carload lots.

Standard, 2-6 in.....60%
Extra Heavy, 2-6 in.....70%
Fittings.....75%

Pipe, Merchant—

Consumers, Carloads.

	Steel.		*Iron.*	
	Blk.	*Galv.*	*Blk.*	*Galv.*
⅛ & ¼ in.	71%	55%	68½%	52½%
⅜ in.	73%	59%	72½%	60½%
½ in.	75%	63%	72½%	60½%
¾ to 6 in.	79%	69%	77	67
7 to 12 in.	74%	59%	72	56½%

Pipe, Vitrified Sewer—

Carload lots.

Standard Pipe and Fittings, 2 to 24 in.:

New England.....68%
New York and New Jersey..71%
*Maryland, Delaware, E. Pa.*75%
West. Pa. and West Va....77%
Virginia.....76%
Ohio, Michigan and Ky....77%
Indiana.....77%

NOTE.—Carload lots are generally delivered.

Pipe, Stove—

Edwards' Nested Stove Pipe:

	C. L.	L. C. L.
5 in., per 100 joints	$7.00	$8.00
6 in., per 100 joints	7.50	8.50
7 in., per 100 joints	8.50	9.50

Planes and Plane Irons—

Wood Planes—

Bench, first qual.....40&10%
Bench, Second qual.....50&10%
Molding.....33⅓&10%
Bailey's (Stanley R. & L. Co.)....40%
Chapin-Stephens Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Toy and German.....40@40&10%
Chaplin's.....60%
Ohio Tool Co.:
Bench, First Quality.....40@40&10%
Bench, Second Quality....50@50&10%
Molding.....33⅓@33⅓&10%
Adjustable Wood Bottom.....60%
Unicn.....60%

Iron Planes—

Bailey's (Stanley R. & L. Co.)....40%
Chaplin's Iron Planes.....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....35%
Ohio Tool Co.'s Iron Planes.....60%
Sargent's.....60&10%
Union.....60%

Plane Irons—

Wood Bench Plane Irons.....
25&10@30%
Buck Bros.....30%
Chapin-Stephens Co.....30@30&10%
Ohio Tool Co.....30%
Stanley R. & L. Co.....35%
Union.....50%
L. & I. J. White.....20&5@25%

Planters, Corn, Hand—

Kohler's Eclipse.....₱ doz. $8.50

Plates—

Felloe.....lb. ¼@4¼¢
Self-Sealing Pie Plates (R. M. Co.). ₱ doz. $2.00.....50%

Pliers and Nippers—

Button Pliers....75&10@75, 10, 5%
Gas Burner, per doz., 5 in., $1.25 @ $1.30; 6 in., $1.45 @ $1.50.

Gas Pipe..	*7*	*8*	*10*	*12-in.*
	$2.00	*$2.25*	*$3.00*	*$3.75*

Acme Nippers.....50&5%
Cronk & Carrier Mfg. Co.:
American Button.....75&10%
Cronk's.....60%
Stub's Pattern.....50%
Combination and others.....33⅓%
Heller Farriers' Nippers, Pincers and Tools.....40&10@40&10&10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....50%
P. S. & W. Tinners' Cutting Nippers.....40%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Elm City.....33⅓%
Lodi.....50%
Paragon.....50%
Swedish Side, End and Diagonal Cutting Pliers.....50%
Utica Drop Forge & Tool Co.:
Pliers and Nippers, all kinds.....40%

Plumbs and Levels—

Chapin-Stephens Co.:
Plumbs and Levels.....30@30&10&10%
Chapin's Imp. Brass Cor.40@40&10&10%
Pocket Levels.....30@30&10&10%
Disston's Plumbs and Levels.....70%
Disston's Pocket Levels.....70%
C. E. Jennings & Co.'s Iron.....33⅓%
C. E. Jennings & Co.'s Iron, Adjustable.....40&7½%
Stanley R. & L. Co.....45%
Stanley's Duplex.....38%
Woods' Extension.....33⅓%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz., No. 1, $6.00; No. 2, $9.00; No. 3, $9.00; No. 4, $12.00.....50%

Points, Glaziers'—

Bulk and 1-lb. papers.....lb..9¢
½-lb. papers.....lb..9@10½¢
¼-lb. papers.....lb..9¼@11¢

Pokes, Animal—

Ft. Madison Hawkeye.....₱ doz. $3.25
Ft. Madison Western.....₱ doz. $4.00

Police Goods—

Manufacturers' Lists...25@25&5%
Tower's.....25%

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, $1.25; ₱ doz., $12.00; No. 2, 10 lb can (cake), each, $2.50; ₱ doz., $24.00.
Prestoline Liquid, No. 1 (½ pt.), ₱ doz., $3.00; No. 2 (1 qu.), $9.72....40%
Prestoline Paste.....40%
George William Hoffman:
U. S. Metal Polish Paste, 3 oz. boxes, ₱ doz, 50¢; ₱ gro. $4.50; ½ lb boxes, ₱ doz. $1.25; 1 lb boxes, ₱ doz. $2.25.
U. S. Liquid, 8 oz. cans, ₱ doz., $1.25; ₱ gro., $12.00.
Barkeepers' Friend Metal Polish, ₱ doz., $1.75; ₱ gro., $18.00.
Wynn's White Silk, ½ pt. cans, ₱ doz. $2.00

Stove—

Black Eagle Benzine Paste, 5 lb cans, ₱ lb 10¢
Black Eagle, Liquid, ½ pt. cans.. ₱ doz. 75¢
Black Jack Paste, ¾ lb cans, ₱ gr. $9.00
Black Kid Paste, 5 lb can....each, $0.65
Ladd's Black Beauty Liquid, per 100 tins.....$6.75
Joseph Dixon's, ₱ gr. $5.75.....10%
Dixon's Plumbago.....₱ lb 14¢
Fireside.....₱ gr. $2.50
Gem, ₱ gr. $4.50.....10%
Japanese.....₱ gr. $3.50
Jet Black.....₱ gr. $3.50
Peerless Iron Enamel, 10 oz. cans.. ₱ doz. $1.50
Wynn's:
Black Silk, 5 lb pail.....each 70¢
Black Silk, ½ lb box.....₱ doz. $1.00
Black Silk, 5 oz. box.....₱ doz. $0.75
Black Silk, ½ pt. liq.....₱ doz. $1.00

Poppers, Corn—

1 qt., Square.....gro. *$9.00*
1 qt., Round.....gro. *$10.00*
1½ qt., Square.....gro. *$11.00*
2 qt., Square.....gro. *$13.00*

Post Hole and Tree Augers and Diggers—

See also *Diggers, Post Hole, &c.*

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6½ ft., 48¢.
Steel Hitching Posts.....each $1.30

Potato Parers—

See *Parers, Potato.*

Pots, Glue—

Enameled.....40%
Tinned.....35%

Powder—

In Canisters:
Duck, 1 lb.....each *45¢*
Fine Sporting, 1 lb....each *75¢*
Rifle, ½-lb.....each *15¢*
Rifle, 1-lb.....each *25¢*
In Kegs:
12½-lb. kegs.....*$3.50*
25-lb. kegs.....*$4.50*
King's Semi-Smokeless:
Keg (25 lb bulk).....$6.50
Half Keg (12½ lb bulk).....$3.50
Quarter Keg (6¼ lb bulk).....$1.90
Case 24 (1 lb cans bulk).....$8.50
Half case (1 lb cans bulk).....$4.50
King's Smokeless: Shot Gun. Rifle.
Keg (25 lb bulk).....$12.00 $15.00
Half Keg (12½ lb bulk).... 6.25 7.75
Quarter Keg (6¼ lb bulk). 3.25 4.00
Case 24 (1 lb cans bulk).. 14.00 17.00
Half case 12 (1 lb c. bk).. 7.25 8.75
Robin Hood Sm'less Shot Gun..50&20%

Presses—

Fruit and Jelly—

Enterprise Mfg. Co.....20@25%

Seal Presses—

Morrill's No. 1, ₱ doz., $20.00.....50%

Pruning Hooks and Shears

See *Shears.*

Pullers, Cork—

Invincible Cork Puller.....$21.00

Pullers, Nail—

Cyclops.....50%
Miller's Falls, No. 3, ₱ doz., $12.00.. 33⅓&10%
Morrill's No. 1, Nail Puller, ₱ doz. $20.00.....50%
Pearson No. 1, Cyclone Spike Puller, each $30.00.....50%
Scranton, Case Lots:
No. 2B (large).....$5.50
No. 3B (small).....$5.00
Smith & Hemenway Co.:
Diamond B, No. 2, case lots..... ₱ doz. $6.00
Diamond B, No. 3, case lots..... ₱ doz. $5.50
Giant No. 1, ₱ doz. $18; No. 2, $16.50; No. 3, $15.....33⅓%
Staple Pullers.....60%
Parrot Tack and Stub Puller, ₱ doz., 75c.: ₱ gro., $6.00

Pulleys, Single Wheel—

Inch	*1½*	*1¾*	*2*	*3*
Awning or Tackle, doz.	*$0.50*	*.55*	*.60*	*1.05*

Hay Fork, Swivel or Solid Eye. doz., ¼ in., $1.25; 5 in., $1.55

Inch	*2*	*2¼*	*2½*
Hot House, doz.	*$0.65*	*.85*	*1.20*

Inch	*1¼*	*1½*	*1¾*	*2*
Screw, doz.	*$0.16*	*.19*	*.23*	*.30*

Inch	*1¾*	*2*	*2¼*	*2½*
Side, doz.	*$0.25*	*.40*	*.55*	*.60*

Inch	*1½*	*1¾*	*2*	*2½*

Stowell's:
Ceiling or End, Anti-Friction..60&10%
Dumb Waiter, Anti-Friction..60&10%
Electric Light.....60%
Side, Anti-Friction.....60&10%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1¾ and 2 in.....16@19¢
Auger Mortise, no Face Plate, per doz., 1¾ and 2 in..16@19¢
Acme.....1¼ in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 7, 2 in.... ₱ doz. 50%
Grand Rapids All Steel Noiseless..50%
Ideal.....70&10%
Niagara.....1¾ in., 16¢; 2 in., 19¢
No. 26, Troy..1¾ in., 14½¢; 2 in., 16½¢
Star.....1¾ in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.

Pumps—

Cistern.....60@60&10%
Pitcher Spout.....60@80&10%
Wood Pumps, Tubing, &c..45@50%
Barnes Dbl. Acting (low list).....50%
Barnes' Pitcher Spout.....75&10&5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....$16.00
Daisy Spray Pump.....₱ doz. $6.75
Flint & Walling's Fast Mail Hand, (low list).....55%
Flint & Walling's Fast Mail (low list).....55&5%
Flint & Walling's Tight Top Pitcher.80%
National Specialty Mfg. Co., Measuring, $6.00.....30%
Mechanical Sprayer.....$6.00
Myers' Pumps (low list).....50%
Myers' Power Pumps.....50%
Myers' Spray Pumps.....50&10%

Pump Leathers—

Plunger and Lower Valve—Per gro.:

Inch...	*2*	*2¼*	*2½*	*2¾*
	$2.20	*2.50*	*2.75*	*3.00*

Inch...	*3*	*3¼*	*3½*	*3¾*	*4*
	$3.30	*3.60*	*3.85*	*4.10*	*4.40*

Plunger Cup Leathers—Per 100:

Inch...	*2½*	*3*	*3½*	*4*
	$2.75	*3.85*	*5.00*	*6.00*

Punches—

Saddlers' or Drive, good..... *doz. 50@75¢*
Spring, single tube, good quality.....*$1.75@2.00*
Revolving (4 tubes)..... *doz. $3.50@3.75*
Bemis & Call Co.'s Cast St'l Drive.50%
Bemis & Call Co.'s Check.....55%
Morrill's Nos. 1AA, 1A, 1B, 1C, $15.00.....50%
Hercules, 1 die, each $5.00.....50%
Niagara Hollow Punches.....40%
Niagara Solid Punches.....55&10%
Wm. Schollhorn Co.:
Bernard.....33⅓%
Lodi.....50%
Paragon.....50%
Steel Screw, B. & K. Mfg. Co.....50%
Tinners' Hollow, P., S. & W. Co..40%
Tinners' Solid, P., S. & W. Co., ₱ doz., $1.44.....60%

Rail—Barn Door, &c.—

Sliding Door, Painted Iron.... 2½@2¾¢
Sliding Door, Wrought Brass, 1⅛ in., lb., 36¢.....30%
Alith Mfg. Co.:
No. 1, Reliable Hgr. Track, ₱ ft. 5½¢
No. 2, Reliable Hgr. Track, ₱ ft. 7¢
Cronk's:
Double Braced Steel Rail..₱ ft. 2¾¢
O. N. T. Rail.....2½¢
Griffin's:
xxx, ₱ 100 ft., 1 x 3-16 in., $3.00; 1¼ x 3-16 in., 3.50.
Hinged Hanger, ₱ 100 ft., 1 x 3-16 in., $3.10; 1¼ x 3-16 in., $3.60.
Lane's:
Hinged Track, ₱ 100 ft., 1 in., $3.40; 1¼ in., $4.10.
O. N. T. ₱ 100 ft., 1 in., $2.75; 1¼ in., $3.50; 1½ in., $4.00.
Standard, 1¼ in.....₱ 100 ft. $4.00
Lawrence Bros.:
₱ 100 ft. No. 201, $4.00; No. 202, $4.00
New York, 1 x 3-16 in., ₱ 100 ft. $2.75
McKinney's:
Hinged Hanger Rail, ₱ ft., 11¢..50%
None Better.....₱ ft. 3¾¢
Standard.....₱ ft. 4¢
Myers' Stayon Track.....60&10%
Richards' Mfg. Co.:
Common 1 x 3-6 in., $2.25; 1¼ x 3-16, $2.50; 1½ x 3-16, $2.75.
Special Hinged Hanger Rail...60&10%
Lag Screw Rail, No. 65.....50%
Gauge Trolley Track, ₱ ft., No. 31, 9¢; No. 32, 14¢; No. 33, 20¢.
Safety Door Hanger Co.'s Storm King Safety.....60%
Safety Door Hanger Co.'s U. S. Standard.....60%
Stowell's:
Cast Rail.....₱ ft. 1¾¢
Steel Rail, Plain.....25%
Wrought Bracket, 1 3-16 in.....₱ ft. 7¢
Wrought Bracket, 1½ x 5-16..₱ ft. 7¢
Swett's Hylo, ₱ ft. 11¢.....60%
P. L. B. Steel Rail.....₱ 100 ft. $3.00
No. 0, 1 x 3-16.....₱ 100 ft. $2.75

Rakes—

NOTE.—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Fort Madison Red Head Lawn....$3.25
Fort Madison Blue Head Lawn....$2.70
Jackson Lawn, 29 and 30 teeth, ₱ doz., net.....$4.25
Cronk's:
New Champion Garden, ₱ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00..75%
Victor Garden, ₱ doz., 12 teeth, $15.00; 14, $16.50; 16, $18.00.....80%
Queen City Lawn, ₱ doz., 20 teeth, $3.45; 24, $3.60.....net.
Anticlog Lawn, ₱ doz.....$1.00
Malleable Garden.....70&10%
Kohler's:
Lawn Queen, 20-tooth.....₱ doz. $3.45
Lawn Queen, 24-tooth.....₱ doz. $3.60
Paragon, 20-tooth.....₱ doz. $2.75
Paragon, 24-tooth.....₱ doz. $3.00
Steel Garden, 14-tooth....₱ doz. $2.40
Malleable Garden, 14-tooth, ₱ doz. $1.75@2.00
Weldless Steel Garden.....75&5%

Rasps, Horse—

Digston's.....75%
Heller Bros.'.....70&5@70&10&5%
McCaffrey's American St'd...60&10&5%
New Nicholson.....70&10@75%
See also Files.

Razors—

Boras—I C.....60%
Fox Razors, No. 42..₱ doz. $20.00
Fox Razors, No. 44..₱ doz. $20.00
Fox Razors, No. 82, Platina.... ₱ doz. $25.00 } 40% 25 Dis.
Red Devil.....50%
Silberstein:
Carbo Magnetic.....$18.00
Griffon, No. 66.....$15.00
Griffon, No. 00.....$12.00
All other Razors.....40%

Safety Razors—

Kampfe Bros.:
Star Safety.....25%
Star Interchangeable.....25%
Star Safety Corn.....25%
Silberstein.....40%

Reels, Fishing—

Hendryx:
M 6, Q 6, A 6, B 6, M 9¼, M 16, Q 16, A 16, B 16, 4008, Rubber, Populo, Nickeled Populo.....20%
Aluminum, German Silv., Bronze.25%
1240 N, 124 N.....20%
3004 N, 06 N, 6 RM, G 9.....25%
4 N, 6 PN, 24 N, 26 PN.....20%
2904 P.....33⅓%
2904 PN.....33⅓%
0924 N.....33⅓%
02084 N.....33⅓%
002904 PN.....33⅓%
802 N.....33⅓%
986 PN, 2904 N, 974 PN.....25%
5009 PN, 5009 N.....20%
Competitor, 102 P, 102 PN, 202 P, 202 PN, 102 PR, 202 PR.....20%
304 P, 304 PN, 00304 P, 00304 PN.33⅓%

Registers—*List July 1, 1903.*

Japanned, Electroplated and Bronzed.....70&10%

Revolvers—

Single Action.....95¢@*$1.00*
Double Action, except 44 cal.$1.85
Double Action, 44 caliber....*$2.00*
Automatic.....*$3.45*
Hammerless.....*$4.00*

Riddles, Hardware Grade

16 in.....per doz.*$2.50@$2.75*
17 in.....per doz.*$2.75@$3.00*
18 in.....per doz.*$3.00@$3.25*

Rings and Ringers—

Bull Rings—

	2	*2½*	*3 inch.*
Steel	*$0.70*	*0.75*	*0.80 doz.*
Copper	*$1.00*	*1.15*	*1.40 doz.*

Rea's Improved Self-Piercing, Copper, 2 in., ₱ doz., $1.25; 2½ in., $1.50; 3 in., $1.75.

Hog Rings and Ringers—

Hill's Rings, gro. boxes.$4.00@4.50
Hill's Ringers, Gray Iron..... *doz. 50@55¢*
Hill's Ringers, Malleable Iron.. *doz. 70@75¢*
Blair's Rings...per gro.$4.75@5.25
Blair's Ringers.per doz. $0.60@ .65
Brown's Rings..per gro.$5.00@5.50
Brown's Ringers.per doz.$0.60@ .65

Rivets and Burrs—

Copper.....40¢10@45%
Iron or Steel.....75@75&5%

Bifurcated and Tubular—

Assorted in Boxes.

Bifurcated, per doz. boxes, pasteboard boxes, 23@25¢; Tin boxes, 29@32¢.
Tubular, per doz. boxes, 50 count, 29@32¢; 100 count, 51@58¢.

Rollers—

Acme, Stowell's Anti-Friction.....50%
Barn Door, Sargent's list.....60%
Cronk's Stay No. 65, $0.90; No. 50.....$1.00
Cronk's Brinkerhoff No. 55, $0.60; No. 56.....$0.84
Lane's Stay.....40%
Richards' Stay:
Handy Adj. and Reversible No. 53.75¢
O. K. Adj. and Reversible No. 58.50¢
Lag Screw, Nos. 55 and 57.....50%
Underwriters', Nos. 59, 60.....50%
Favorite, No. 54.....60%
Stowell's Barn Door Stay..₱ doz. $1.00
Swett's Anti-Friction.....50%
Screw and Spike Stay.....₱ doz. 65¢
Hinge Adjustable Stay.....₱ doz. 90¢

Rope—

Manila, 7-16 in. diam. and larger:
Pure.....lb., *12½¢*
Sisal, 7-16 in. diam. and larger:
Pure.....lb., *10¢*
Sisal, 7-16 in. diam. and larger:
No. 2 quality.....lb., *8¢*
Sisal, Hay, Hide and Bale Ropes, Medium and Coarse:
Mixed.....lb., *8¢*
Pure.....lb. *10¢*
Sisal, Tarred, Medium Lath Yarn, Coarse and Untarred:
Mixed.....lb. *8¢*
Pure.....lb. *10¢*
Cotton Rope:
Best, ¼-in. and larger.16½@18¢
Medium, ¼-in. and larger.. 15½@16½¢
Common, ¼-in. and larger..10¢
In coils, ½¢ advance.
Jute Rope:
Thread No. 1, ¼-in. & up, lb. 6¼¢
Thread No. 2, ¼-in. & up, lb.5¾¢
Old Colony Manila Transmission Rope.....₱ lb 17½¢

Wire Rope—

Galvanized.....37½@*42½%*
Plain.....45@*52½%*

Ropes, Hammock—

Covert Mfg. Co.:
Jute.....45%
Sisal.....33⅓%
Covert Saddlery Works.....60&5%

Rulers, Desk—
Stimpson & Son:
Boxwood and Maple....30&10%

Rules
Boxwood.....60&10&10%
Ivory.....35&10@35&10&10&5%
Chapin-Stephens Co.:
Boxwood.....60@60&10%
Flexifold.....27½&10&10&2½%
Ivory.....35@35&10&10%
Miscellaneous.....50@50&10&10%
Combination.....55@55&10%
Stationers'.....10@10&10%
Keuffel & Esser Co.:
Folding, Wood.....35&10%
Folding, Steel.....33⅓&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....60%
Stanley R. & L. Co.:
Boxwood.....62½%
Ivory.....45%
Miscellaneous.....60%
Zig Zag.....40%
Zig Zag, Pin Joint.....42½%
Upson Nut Co.:
Boxwood.....60@60&10%
Ivory.....35&10@35&10&10%

Sash Balances—
See *Balance, Sash.*

Sash Locks—
See *Locks, Sash.*

Sash Weights—
See *Weights, Sash.*

Sausage Stuffers or Fillers
See *Stuffers or Fillers, Sausage.*

Saw Frames—
See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Saws—
Atkins':
Circular.....50%
Band.....50&10@60
Cross Cuts.....35&5%
Mulay, Mill and Drag.....50%
One-Man Saw.....40%
Wood Saws.....40%
Hand, Compass, &c.....40%
Chapin-Stephens Co.:
Turning Saws and Frames..30@30&10%
Diamond Saw & Stamping Works:
Sterling Kitchen Saws.....30&10&10%
Disston's:
Circular, Solid and Ins'ted Tooth.50%
Band, 2 to 14 in. wide.....60%
Band, ¼ to 1¾.....60%
Crosscuts.....50%
Narrow Crosscuts.....55%
Mulay, Mill and Drag.....50%
Framed Woodsaws.....35%
Woodsaw Blades.....35%
Woodsaw Rods.....25%
Hand Saws, Nos. 12, 99, 9, 16, d100, D8, 120, 76, 77, 8.....25%
Hand Saws, Nos. 7, 107, 107½, 3, 1, 0, 00, Combination.....30%
Compass, Key Hole, &c.....25%
Butcher Saws and Blades.....35%
C. E. Jennings & Co.'s:
Back Saws.....25%
Butcher Saws.....30%
Compass and Key Hole Saws..35&5%
Framed Wood Saws.....30%
Hand Saws.....20&2½%
Wood Saw Blades.....35%
Millers Falls:
Butcher Saws.....15&10%
Star Saw Blades.....15&10%
Peace & Richardson's Hand Saws...30%
Simonds':
Circular Saws.....50%
Crescent Ground Cross Cut Saws..35%
One-Man Cross Cuts.....40&10%
Gang Mill, Mulay and Drag Saws.50%
Band Saws.....50%
Back Saws.....25@25&7½%
Butcher Saws.....35@35&7½%
Hand Saws.....25@25&7½%
Hand Saws, Bay State Brand.....45%
Compass, Key Hole, &c..25@25&7½%
Wood Saws.....35@35&7½%
Springfield Mach. Screw Co.:
Diamond Kitchen Saws....40&10@50%
Butcher Saws Blades.....35@40%
Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws.....50%

Hack Saws—
Atkins' Hack Saw Blades A A A..25%
Disston's:
Concave Blades.....25%
Keystone.....40%
Hack Saw Frames.....30%
Fitchburg File Works, The Best...35%
C. E. Jennings & Co.'s:
Hack Saw Frames, Nos. 175, 180....40&7½%
Hack Saws, Nos. 175, 180, complete, 40&7½%
Goodell's Hack Saw Blades.....40%
Griffin's Hack Saw Frames..35&5&10%
Griffin's Hack Saw Blades...35&5&10%
Springfield Mach. Screw Co.:
Diamond Hack Saw Blades.....35%
Diamond Hack Saw Frames.....50%
Star Hack Saws and Blades.....15&10%
Sterling Hack Saw Blades....30&10&5%
Sterling Hack Saw Frames...30&10&10%
Sterling Power Hack Saw Machines, each, No. 1, $25.00; No. 2, $30.00..10%
Victor Hack Saw Blades.....25%
Victor Hack Saw Frames.....40%

Scroll—
Barnes' No. 7, $15.....25%
Barnes' Scroll Saw Blades.....40%
Barnes' Velocipede Power Scroll Saw, without boring attachment, $18; with boring attachment, $20.....20%
Lester, complete, $10.00.....15&10%
Rogers, complete, $4.00.....15&10%

Scalers, Fish—
Covert's Saddlery Works.....60&10%

Scales—
Family, Turnbull's....50@50&10%
Counter:
Hatch, Platform, ½ oz. to 4 lbs.....doz. $5.50
Two Platforms, ½ oz. to 8 lbs.....doz. $16.00
Union Platform, Plain.$1.70@1.90
Union Platform, Stpd.$1.85@2.15
Chatillon's:
Eureka.....25%
Favorite.....40%
Crocers' Trip Scales.....50%
Chicago Scale Co.:
The "Little Detective"....25 lbs 50%
Union or Family No. 2.....60%
Portable Platform (reduced list)..50%
Wagon or Stock (reduced list).25@35%
"The Standard" Portables.....50%
"The Standard" R. R. and Wagon.50%

Scrapers—
Box, 1 Handle....doz. $2.00@2.25
Box, 2 Handle....doz. $2.60@2.85
Ship...Light, $2.00; Heavy, $4.50
Adjustable Box Scraper (S. R. & L. Co.), $6.00.....45%
Chapin-Stephens Co., Box.....30@30&10&10%

Screens, Window and Frames—
Maine Screen Frames.....40&10&5%
See also *Doors.*

Screws—Bench and Hand
Bench, Iron, doz., 1 in., $2.50@2.75; 1⅛, $3.00@3.25; 1¼, $3.50@3.75
Bench, W'd, Beech.doz. 30@30&5%
Hand, Wood.....30@30&5%
R. Bliss Mfg. Co., Hand....30@30&10%
Chapin-Stephens Co., Hand..30@30&10%
Ohio Tool Co., Bench and Hand..30%

Coach, Lag and Hand Rail—
Lag, Cone Point, list Oct. 1, '99.....75&15%
Coach, Gimlet Point, list Oct. 1, '99.....75&10%
Hand Rail, list Jan. 1, '81....70&10@75%

Jack Screws—
Standard List.....80@80&5%
Millers Falls.....50&10&10%
Millers Falls, Roller.....50&10%
P., S. & W.....50%
Sargent.....70&10%
Swett Iron Works.....75&10@80&5%

Machine—
List Jan. 1, '98:
Flat or Round Head, Iron....50@50&10%
Flat or Round Head, Brass....50@50&10%

Set and Cap—
Set (Iron).....80%
Set (Steel), net advance over Iron.....25%
Sq. Hd. Cap.....75%
Hex. Hd. Cap.....75%
Rd. Hd. Cap.....60&10%
Fillister Hd. Cap.....60&10&10%

Wood—
List July 23, 1903.
Flat Head, Iron....87½&10@..%
Round Head, Iron...85 &10@..%
Flat Head, Brass...85 &10@..%
Round Head, Brass..80 &10@..%
Flat Head, Bronze...77½&10@..%
Round Head, Bronze.75 &10@..%
Drive Screws.....87½&10%

Scroll Saws—
See *Saws, Scroll.*

Scythes—
Per doz.
Grass, No. 1, Plain Finish...$6.25
Clipper, Bronzed Webb....$6.50
No. 3 Clipper, Pol'd Webb..$6.75
No. 6 Clipper & Solid Steel..$7.00
Bush, Weed & Bramble, No. 2..$6.50
Grain, No. 1.....$8.25
Bronzed Webb, No. 1.....$8.50
Nos. 3 & 4 Clipper, Grain..$8.75
Solid Steel No. 6.....$9.25

Seeders, Raisin—
Enterprise.....25@30%

Sets—Awl and Tool—
Aiken's Sets, Awl and Tool:
No. 20, ₱ doz., $10.00.....60&10%
Fray's Adj. Tool Handles, Nos. 1, $12; 2, $18; 3, $12; 4, $9; 5, $7.....50%
C. E. Jennings & Co.'s Model Tool Holders.....30%
Millers Falls Adj. Tool Handles, No. 1, $12; No. 4, $12; No. 5, $18....15&10%

Garden Tool Sets—
Ft. Madison Three Plows, Hoe, Rake and Shovel.....₱ doz sets $9.00

Sets, Nail—
Octagon.....gro. $3.50@3.75
Buck Bros.....27½%
Cannon's Diamond Point, ₱ gro.$12.40%
Mayhew's.....₱ gro. $9.00
Snell's Corgated, Cup Pt....₱ gro. $7.20
Snell's Knurled, Cup Pt....₱ gro. $7.20
Springfield Mach. Screw Co.:
Diamond Knurled Cup Pt.₱ gro. $7.50

Rivet—
Regular list.....75@75&10%

Saw—
Aiken's:
Genuine.....50&10%
Imitation.....50&10%
Atkin's:
Criterion.....40%
Adjustable.....40%
Bemis & Call Co.'s:
Cross Cut.....30%
Plate.....20%
Disston's Star and Monarch.....25%
Morrill's No. 1, $15.00.....50%
Nos. 3 and 4, Cross Cut, $20.00...50%
No. 5, Mill, $30.00.....50%
Nos. 10, 11, 95, $15.60.....50%
No. 1 Old Style, $10.00.....50%
Special, $16.25.....50%
Giant Royal Cross Cut.....₱ doz. $8.00
Royal, Hand.....₱ doz. $4.50
Taintor Positive.....₱ doz. $6.75

Shaving
Fox Shaving Sets, No. 30.....₱ doz., net, $24.00
Smith & Hemenway Co.'s.....60%

Sharpeners, Knife—
Chicago Wheel & Mfg. Co.....70%
Pike Mfg. Co.:
Fast Cut Pocket Knife Hones, ₱ doz.....$1.50
Mounted Kitchen Sand Stone, ₱ doz.....$1.50
Natural Grit Carving Knife Hones, ₱ doz.....$3.00
Quick Cut Emery Carving Knife Hones, ₱ doz.....$1.50
Quick Edge Pocket Knife Hones, ₱ doz.....$2.50
} 33⅓%

Skate—
Smith & Hemenway Co.....20%

Shaves, Spoke—
Iron.....doz.$1.10@1.25
Wood.....doz.$1.75@2.25
Bailey's (Stanley R. & L. Co.).....45%
Razor Edge (Stanley R. & L. Co.)..35%
Chapin-Stephens Co.....30@30&10&10
Goodell's, ₱ doz. $9.00.....15&10%
Wood's F1 and F2.....50%

Shears—
Cast Iron..	7	8	9 in.
Best	*$16.00*	*18.00*	*20.00 gro.*
Good	*$13.00*	*15.00*	*17.00 gro.*
Cheap	*$5.00*	*6.00*	*7.00 gro.*

Straight Trimmers, &c.:
Best quality Jap....70@70&10%
Best quality, Nickel..60@60&10%
Fair quality, Jap....80@80&5%
Fail quality, Nickel..75@7"&10%
Tailors' Shears.....40@40&10%
Acme Cast Shears.....40@40&5%
Heinisch's Tailor's Shears.....10%
Wilkinson's Sheep, 1900 list.....50&10%

Tinners' Snips—
Steel Blades.....20&5@20&10%
Steel Laid Blades....40&10@50%
Forged Handles, Steel Blades, Berlin.....50@50&5%
Heinisch's Snips.....40%
Jennings & Griffin Mfg. Co.'s, 6½ to 10 in.....50%
Niagara Snips.....40%
P., S. & W. Forged Handles.....20%

Pruning Shears—
Cronk's Hand Shears.....33⅓%
Cronk's Wood Handle Shears.....33⅓%
Disston's Combined Pruning Hook and Saw, ₱ doz. $18.00.....25%
Disston's Pruning Hook, ₱ doz. $12.00.....25%
John T. Henry Mfg. Co.:
Pruning Shears, all grades....50&10%
P., S. & W. Co.....33⅓%
Wilkinson's Hedge, 1900 list....50&10%
Wilkinson's Lawn and Border.....50%

Sheaves—Sliding Door—
Stowell's Anti-Friction.....50%
Patent Roller, Hatfield's, Sargent's list.....70&10%
Reading.....40%
R. & E. list.....33⅓%
Wrightsville Hatfield Pattern.....80%

Sliding Shutter—
Reading list.....40%
R. & E. list.....33⅓%
Sargent's list.....10&10%

Shells—Shells, Empty—
Brass Shells, Empty:
Climax, Club, Rival, 10 and 12 gauge.....65&5%
Paper Shells, Empty:
Acme, Ideal, Leader, New Rapid, Magic, 10, 12, 16 and 20 gauge..25&5%
Blue Rival, New Climax, Challenge, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge.....20%
Climax, Union, League, New Rival, 10 and 12 gauge.....25%
Climax, Union, League, New Rival, 14, 16 and 20 gauge.....20%
Expert, Metal Lined and Pigeon, 10 12, 16 and 20 gauge.....33⅓
Robin Hood, Low Brass.....20&5%
Robin Hood, High Brass.....30&5%

Shells, Loaded—
Loaded with Black Powder..40%
Loaded with Smokeless Powder: medium grade.....40&5%
Loaded with Smokeless Powder, high grade.....40&10&10%
Robin Hood Smokeless Powder:
Robin Hood, Low Brass.....50%
Comets, High Brass.....50&10&5%

Shoes, Horse, Mule, &c.—
F.o.b. Pittsburgh:
Iron.....per keg $4.00
Steel.....per keg $3.75
Burden's, all sizes.....₱ keg $3.90

Shot—
Drop, up to B, 25-lb. bag....$1.80
Drop, B and larger.....per 25-lb. bag, $2.05
Buck, 25-lb. bag.....$2.05
Chilled, 25-lb. bag.....$2.05

Shovels and Spades—
Association List, Nov. 15, 1902..40%

Snow Shovels—
Long Handle.....$2.75@$3.00
Wood and Mail, D. Handle, $3.25@$3.50

Sieves and Sifters—
Hunter's Imitation.....gro. $9.50@10.00
Hunter's Genuine.....per gro. $12.00@12.50
Buffalo Metallic Blued, R. M. Co., ₱ gr.

14&16	16&18	18&20
$13.20	$13.50	$14.40

Shaker (Barler's Pat.) Flour Sifters, ₱ doz., $2.00.....20%

Sieves, Seamless Metallic
—Per dozen.—

Mesh	*14*	*16*	*18*	*20*
Iron Wire	*$1.05*	*1.05*	*1.10*	*1.20*
Tinned Wire	*$1.15*	*1.15*	*1.20*	*1.30*

Sieves, Wooden Rim—
Nested, 10, 11 and 12 Inch.
Mesh 18, Nested....doz. $0.90@0.95
Mesh 20, Nested....doz. $1.00@1.05
Mesh 24, Nested....doz. $1.30@1.40

Sinks, Cast Iron—
Painted, Standard list:
12 x 12 to 22 x 36 in.....60&5%
20 x 40 to 24 x 50 in.....55%
24 x 60 to 24 x 120 in.....35%
Barnes' low list:
Up to and including 20 x 36 in....60%
20 x 40 to 24 x 50 in.....55%
NOTE.—There is not entire uniformity in lists used by jobbers.

Skeins, Wagon—
Cast Iron.....80 @30&10%
Steel.....40@40&10%

Slates, School—
Factory Shipments.
"D" Slates.....50@50&10%
Eureka, Unexcelled Noiseless..60&5 tens
Victor A, Noiseless.60&4 tens &5%

Slaw Cutters—See *Cutters.*

Snaps, Harness—
German.....40@40&10%
Covert Mfg. Co.:
Derby.....30&2%
High Grade.....45%
Jockey.....35%
Trojan.....45%
Yankee.....30&2%
Yankee Roller.....30&2%
Covert's Saddlery Works:
Crown.....60%
German.....60%
Model.....60%
Triumph.....60%
Oneida Community:
Harness Snaps, 1 inch.....60&5%
Swivel Snaps.....60%
Swivels.....50%
Sargent's Patent Guarded....66⅔&10%

Snaths—
Scythe.....50%

Snips, Tinners—See *Shears.*

Spoons and Forks—
Silver Plated—
Good Quality.....50&10@60&5%
Cheap.....60@60&10%
International Silver Co.:
1847 Rogers Bros. and Rogers & Hamilton.....40&10%
Rogers & Bro., William Rogers' Eagle Brand.....50&10%
Anchor, Rogers Brand.....60%
Wm. Rogers & Son.....60&10%

Miscellaneous—
German Silver.....60@60&5%
Cattaraugus Cutlery Co.:
Seneca Silver.....50%

Tinned Iron—
Teas.....per gro. 45@50¢
Tables.....per gro. $0.50@$1.00

Springs—Door—
Chicago (Coil).....40&10%
Gem (Coil).....20%
Pullman (Coil).....25%
Reliance (Coil).....40&10%
Star (Coil).....30%
Torrey's Rod, 39 in.....₱ doz. $1.10
Victor (Coil).....50&10&10%

Carriage, Wagon, &c.—
1¼ in. and Wider: Per lb
Black.....4@4¼¢
Half Bright.....4@4¼¢
Bright.....4½@4¾¢
Painted Seat Springs:
1½ x 2 x 26.....per pr. 42¢
1½ x 3 x 28.....per pr. 70¢

Sprinklers, Lawn—
Enterprise.....25@30%
Philadelphia No. 1, ₱ doz. $12; No. 2, $15; No. 3, $24.....30%
Pleuger & Henger Mfg. Co.:
Cactus.....70%
Japanese.....75%
Nationals.....65%

Squares—
Nickel plated.. } *List Jan. 5, 1900.*
Steel and Iron.. } *75&10@75&10&5%*
Rosewood Hdl. Try Square and T-Bevels.....60&10&10@70%
Iron Hdl. Try Squares and T-Bevels.....40&10@40&10&10%
Disston's Try Sq. and T-Bevels....70%
Winterbottom's Try and Miter, No. 1, 40%; No. 2.....50%

Squeezers, Lemon
Wood, Common, gro., No. 0, $5.25@$5.50; No. 1, $6.25@$6.50.
Wood, Porcelain Lined:
Cheap.....doz. $1.00
Good Grade.....doz. $1.25
Tinned Iron.....doz. $0.75@1.25
Iron, Porcelain Lined...doz. $1.75

Staples—
Barbed Blind.....lb. 6@6½¢
Electricians', Association list..80&10&10&10%
Fence Staples, Plain, $2.25; Galvanized.....$2.55
Poultry Netting Staples.....per lb. 3¼@3½¢
Grand Crossing Tack Co.'s list..80&10%

Steels, Butchers'—
Dick's.....30%
Foster Bros.'.....30%
C. & A. Hoffmann's.....40%

Steelyards—....30@30&10%

Stocks and Dies—
Blacksmiths'.....50@50&10%
Curtis Rev'bie Ratchet Die Stock..25%
Derby Screw Plates.....25%
Green River.....25%
Lightning Screw Plate.....25%
Little Giant.....25%
Reece's New Screw Plates.....25%

Stoners, Cherry—
Enterprise.....25@30%

Stones—Oil, &c.
Chicago Wheel & Mfg. Co., 1904 list:
Gem Corundum Oil, Double Grit.60%
Gem Corundum Axe, Single or Double Grit.....60%
Gem Corundum Slips.....60%
Gem Corundum Razor Hones....50%
Pike Mfg. Co., 1904 list: ₱ lb.
Arkansas St. No. 1, 3 to 5½ in.$2.80
Arkansas St. No. 1, 5½ to 8 in.$3.50
Arkansas Slips No. 1.....$4.00
Lily White Washita, 4 to 8 in.60¢
Rosy Red Washita, 4 to 8 in..60¢
Washita St., Extra, 4 to 8 in.50¢
Washita St., No. 1, 4 to 8 in.40¢
Washita St., No. 2, 4 to 8 in.30¢
Lily White Slips.....90¢
Rosy Red Slips.....90¢
Washita Slips, Extra.....80¢
Washita Slips, No. 1.....70¢
Washita Slips, No. 2.....40¢
} 33⅓%
India Oil Stones (entire list)....33⅓%
Quickcut Emery and Corundum Oil Stone, Double Grit.....33⅓%
Quickcut Emery and Corundum Axe Stone, Double Grit.....33⅓%
Quickcut Emery Rubbing Bricks.33⅓%

Hindostan No. 1, R'g'lar, ₱ lb 8¢
Hindostan No. 1, Small, ₱ lb 10¢
Axe Stones (all kinds)
Turkey Oil Stones, Extra, 5 to 8 in. ₱ lb 80¢ } 33⅓%
Queer Creek Stones, 4 to 8 in. 20¢
Queer Creek Slips 40¢
Sand Stone 6¢

Scythe Stones—

Chicago Wheel & Mfg. Co.:
Gem Corundum, 10 in., $8.00 ₱ gro., 12 in., $10.80.
Norton Emery Scythe Stones:
Less than gross lots ₱ gro. $9.00
One gross or more ₱ gro. $7.20
Lots of 10 gross or more, ₱ gro. $6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. ₱ gro. $12.00
Lamoille S. S. ₱ gro. $11.00
White Mountain S. S. ₱ gro. $9.00
Green Mountain S. S. ₱ gro. $6.00
Extra Indian Pond S.S. ₱ gro. $7.50
No. 1 Indian Pond S.S. ₱ gro. $7.00
No. 2 Indian Pond S.S. ₱ gro. $4.50
Leader Red End S. S. ₱ gro. $4.50
Quick Cut Emery ₱ gro. $10.00
Pure Corundum ₱ gro. $18.00
Crescent $7.00
Emery Scythe Rifles, 2 Coat, $8
Emery Scythe Rifles, 3 Coat, $10
Emery Scythe Rifles, 4 Coat, $12
Balance of 1904 list 33⅓% } 33⅓%

Stoppers, Bottle—

Victor Bottle Stoppers ₱ gro. $9.00

Stops— Bench—

Millers Falls 15&10%
Morrill's, ₱ doz., No. 1, $10.00 50%
Morrill's, No. 2, $12.50 50%

Door—

Chapin-Stephens Co. 60@60&10%

Plane—

Chapin-Stephens Co. 20%

Straps— Box—

Cary's Universal, case lots 25&20%

Hame—

Covert's Saddlery Works 60&10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60@60&10%
Socket *doz. $1.60*
Excelsior Stretcher and Tack Hammer Combined, ₱ doz. $6.00 20%

Strops, Razor—

Star Diagonal Strop 25%

Stuffers, Sausage—

Enterprise Mfg. Co. 25@25&7½%
National Specialty Co., list Jan. 1, 1902 30&5%

Sweepers, Carpet—

National Sweeper Co.: ₱ doz.
Louis XV, Roller Bearing, Gold Plated $120.00
Hepplewhite, Roller Bearing, Silver Plated $72.00
Sheraton, Roller Bearing, N'kel. $60.00
Ye Mission, Roller Bearing, Oxidized Coppered $36.00
Transparent, Roller Bearing, Plate Glass top, Nickeled $36.00
National Queen, Roller Bearing, Fancy Veneers $27.00
Loyal, Roller Bearing, Veneers, Nickeled $25.00
Triple Medal, Roller Bearing, Nickeled $24.00
Marion, Roller Bearing, N'kel. $24.00
Marion Queen, Roller Bearing, Nickeled $21.00
Monarch, Roller Bearing, N'kel. $22.00
Monarch, Roller Bearing, Jap. $20.00
Perpetual, Regular B'r'gs, N'kel. $20.00
Perpetual, Regular B'r'gs, Jap. $18.00
Monarch Extra (17 in. case), Roller Bearing, Nickeled $36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned $33.00
Auditorium (26 in. case), Roller Bearing, Nickeled $54.00
Mammoth (30 in. case), Roller Bearing, Nickeled $60.00
NOTE.—Rebates: 50c per dozen on three-dozen lots; $1 per dozen on five-dozen lots; $2 per dozen on ten-dozen lots; $2.50 per dozen on twenty-five-dozen lots.
Streator Metal Stamping Co.:
Model E, Sanitaire ₱ doz $25.00
Model A, Sterling ₱ doz. $25.00
Model B, Sterling, Nickeled ₱ doz. $23.00
Model B, Sterling, Japanned ₱ doz. $21.00
Model C, Sterling ₱ doz. $21.50
Model D, Sterling ₱ doz. $19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.
American Carpet Tacks 90&50%
American Cut Tacks 90&50%
Swedes Cut Tacks 90&50%
Swedes Upholsterers' Tacks 90&50&10%
Gimp Tacks 90&50&10%
Lace Tacks 90&50&10%
Trimmers' Tacks 90&50%
Looking Glass Tacks 65%
Bill Posters' and Railroad Tacks, 90&50&10%
Hungarian Nails 85%
Finishing Nails 70&10%
Trunk and Clout Nails 80&10%
NOTE.—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10&5% is given on light weights.

Miscellaneous—

Double Pointed Tacks 90&6 *or 7 tens*
Steel Wire Brads, R. & E. Mfg. Co.'s list 50&10@60%
See also Nails, Wire.

Tanks, Oil—

	Each.
Emerald, R. M. Co. 30-gal.	$3.40
Emerald, R. M. Co. 60-gal.	$4.25
Queen City, R. M. Co. 30-gal.	$3.65
Queen City, R. M. Co. 60-gal.	$4.50

Tapes, Measuring—

American Axes' Skin 50@—%
Patent Leather 25@30&5%
Steel 33 1-3&5%
Chesterman's 25@25&5%
Eddy Asses' Skin 40&10@50%
Eddy Patent Leather 25@30&5%
Eddy Steel 40@40&10%
Keuffel & Esser Co.:
Favorite, Ass Skin 40&10@50%
Favorite, Duck and Leather 25&5@25&10%
Metallic and Steel, lower list 35@35&5%
Pocket 35@35&5%
Lufkin's:
Asses' Skin 40&10@50%
Metallic 30@30&5%
Patent Bend, Leather 25&5@25&10%
Pocket 40@40&5%
Steel 33⅓@35%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, ⅝-inch and larger *per 100 lbs. $2.75@$3.00*

Thermometers—

Tin Case 80&10@80&10&5%

Ties, Bale—Steel Wire—

Single Loop 80&2½%
Monitor, Cross Head, &c. 70%

Brick Ties—

Niagara Brick Ties 25&10%

Tinners' Shears, &c.—

See *Shears, Tinners', &c.*

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works 60&10%

Tire Benders, Upsetters, &c.

See *Benders and Upsetters, Tire.*

Tools—Coopers'—

L. & I. J. White 20@20&5%

Hay—

Myers' Hay Tools 50%
Stowell's Hay Carriers 50%
Stowell's Hay Forks 50%
Stowell's Fork Pulleys 50%

Miniature—

Smith & Hemenway Co.'s 25%

Saw—

Atkins' Cross Cut Saw Tools 40%
Simonds' Improved 33⅓%
Simonds' Crescent 25%

Ship—

L. & I. J. White 25%

Transom Lifters—

See *Lifters, Transom.*

Traps—Fly—

Balloon, Globe or Acme, doz. $1.15@$1.25; gro. $11.50@12.00
Harper, Champion or Paragon, doz. $1.25@1.40; gro. $13.00@13.50

Game—

Imitation Oneida 75@75&5%
Newhouse 45@45&5%
Hawley & Norton 65%
Victor 70&10%
Oneida Community Jump 50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8½@9¢
Mouse, Round or Square Wire, doz. 85@90¢
Marty French Rat and Mouse Traps (Genuine):
No. 1, Rat, each $1.21; ₱ doz. $13.25
No. 3, Rat, ₱ doz. $6.50; case of 50 $5.75 doz.
No. 3½, Rat, ₱ doz. $5.25; case of 72 ₱ gro. $4.70 doz.
No. 4, Mouse, ₱ doz. $3.85; case of 150 $3.00 doz.
No. 5, Mouse, ₱ doz. $3.00; case of 150 $2.25 doz.

Trimmers, Spoke—

Wood's E I 50%

Trowels—

Disston Brick and Pointing 30%
Disston Plastering 25%
Disston "Standard Brand" and Garden Trowels 35%
Kohler's Steel Garden Trowels, 5 in. ₱ gro. $1.80
Kohler's Steel Garden Trowels, 6 in. ₱ gro. $6.00
Never-Break Steel Garden Trowels.. ₱ gro. $6.00
Rose Brick and Plastering 25&5%
Woodrough & McParlin, Plastering 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern 50&10%
Western Pattern 60&10%
Handy Trucks ₱ doz. $16.00
Grocery ₱ doz. $15.00
Daisy Stove Trucks, Improved Pattern ₱ doz. $18.50
McKinney Truck each $10.00
Model Stove Trucks ₱ doz. $18.50

Tubs, Wash—

No.	*1*	*2*	*3*
Galvanized, per doz.	*$4.25*	*4.75*	*5.25*
Galvanized Wash Tubs (R. M. Co.): No.	1	2	3 10 20 30
Per doz., net	$5.70	6.30	7.20 6.60 7.20 8.10

Twine, Miscellaneous—

Flax Twine: BC. B.
No. 9, ¼ and ½-lb. Balls 22@24¢
No. 12, ¼ and ½-lb. Balls 18@20¢
No. 18, ¼ and ½-lb. Balls 16@18¢
No. 24, ¼ and ½-lb. Balls 16@18¢
No. 36, ¼ and ½-lb. Balls 15@17¢
Chalk Line, Cotton ½-lb. Balls 25@30¢
Cotton Mops, 6, 9, 12 and 15 lb. to doz. 10@18¢
Cotton Wrapping, 5 Balls to lb., acording to quality 11½@20¢
American 2-Ply Hemp, ¼ and ½-lb. Balls 13@14¢
American 3-Ply Hemp, 1-lb. Balls 13@14¢
India 2-Ply Hemp, ¼ and ½-lb. Balls (Spring Twine) 8½¢
India 3-Ply Hemp, 1-lb. Balls 8½¢
India 3-Ply Hemp, 1½-lb. Balls. 7@8¢
2, 3, 4 and 5-Ply Jute, ½-lb. Balls 9@10¢
Mason Line, Linen, ½-lb. Bls. 46¢
No. 26½ Mattress, ¼ and ½-lb. Balls 87¢
Wool, 3 to 6 ply B 6¢; A 6½¢

Vises—

Solid Box 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable 40%
Standard 40%
Amateur 25%
Columbian Hdw. Co. 40%
Emmert Universal:
Pattern Makers' No. 1, $15.00; No. 2, $12.50.
Machinist and Tool Makers' No. 4A, $12.50; No. 5A, $7.00; No. 6A, $10.00; No. 10A, $22.50.
Presto Quick Acting 25@25&5%
Tiger Machinists' 40%
Fisher & Norris Double Screw 15&10%
Hollands':
Machinists' 40@40&5%
Keystone 65&5@70%
Lewis Tool Co.:
Adjustable Jaw 30%
Monarch 50%
Solid Jaw 50%
Massey Vise Co.:
Clincher 40%
Perfect 20%
Lightning Grip 20%
Merrill's 20%
Millers Falls 60&10%
Parker's:
Victor 20@25%
Regulars 20@25%
Vulcan's 40@45%
Combination Pipe 55@60%
Prentiss 20@25%
Sargent's 40%
Snediker's X. L. 33⅓%
Stephens' 33⅓%
Williamson Mfg Co, Double Swivel. 40&5%

Saw Filers—

Disston's D 3 Clamp and Guide, ₱ doz. $30 25%
Perfection Saw Clamps, ₱ doz. $4.50
Reading 60%
Wentworth's Rubber Jaw, Nos. 1, 2 and 3 45&50%

Wood Workers—

Massey Vise Co.:
Lightning Grip 15%
Perfect 15%
Wyman & Gordon's Quick Action, 6 in., $6.00; 9 in., $7.00; 14 in., $8.00.

Miscellaneous—

Bignall & Keeler Combination Pipe Vise 60&10%
Holland's Combination Pipe 60@60&5%
Massey's Quick Action Pipe 40%
Parker's Combination Pipe:
87 Series 60%
187 Series 60&5%
No. 870 40%
Williamson Mfg. Co. Double Swivel Combination Pipe 40&5%

Wads—*Price per M.* *Dis. 15%*

B. E., 11 up 60¢
B. E., 9 and 10 70¢
B. E., 8 80¢
B. E., 7 80¢
P. E., 11 up $1.00
P. E., 9 and 10 1.25
P. E., 8 1.50
P. E., 7 1.50
Ely's B. E., 11 and larger $1.70@1.75
Ely's P. E., 12 to 20 $3.00@3.25

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:
Enameled 55%
Ground 60%
Plain or Unground 65%
Country Hollow Ware, per 100 lbs. $2.75
White Enameled Ware:
Maslin Kettles 70%
Covered Wares
Tinned and Turned 40%
Enameled 50%
See also *Pots, Glue.*

Enameled—

Agate Nickel Steel Ware 60%
Iron Clad Ware 70&10%
Lava, Enameled 40&10%
Never Break Enameled 50%

Tea Kettles—

Galvanized Tea Kettles:

Inch	*6*	*7*	*8*	*9*
Each	*45¢*	*50¢*	*55¢*	*65¢*

Steel Hollow Ware—

Avery Spiders and Griddles 65@65&5%
Avery Kettles 60%
Porcelained 50&50&10%
Never Break Spiders and Griddles 65&5%
Never Break Kettles 60%
Solid Steel Spiders and Griddles 65&5%
Solid Steel Kettles 60%

Warmers, Foot—

Pike Mfg. Co., Soapstone 40@40&10%

Washboards—

Solid Zinc: ₱ doz.
Crescent, family size, bent frame $3.25
Red Star, family size, stationary protector $3.25
Double Zinc Surface:
Saginaw Globe, family size, stationary protector $2.90
Cable Cross, family size, stationary protector $3.15
Single Zinc Surface:
Naiad, family size, open back, perforated $2.65
Saginaw Globe, protector, family size, ventilated back $2.50
Brass Surface:
Brass King, Single Surface, open back $3.25
Nickel Plate Surface:
No. 1001 Nickel Plate, Single Surface $3.25
Glass Surface:
Glass King, Single Surface, open back $3.25
Enamel Surface:
Enamel King, Single Surface, ventilated back $3.25

Washers—Leather, Axle—

Solid 80&10@80&10&10%
Patent 90@90&5%
Coil: ¾ 1 1¼ 1¼ *Inch.*
10¢ 11¢ 12¢ 13¢ *per box*

Iron or Steel—

Size bolt 5-16 ⅜ ½ ⅝ ¾
Washers $5.70 4.80 3.50 3.30 3.10
The above prices are based on 5.70¢ off list.
In lots less than one keg add ½¢ per lb.; 5-lb. boxes add ½¢ to list.

Cast Washers—

Over ½ inch, barrel lots *per lb. 1¾@2¢*

Weather Strip—

Flexible Felt—

Lined, per 100 ft., $2; $3; $4 40&10%
Moore's Unlined, per 100 ft., $2; $3; $4 50&10%

Wedges—

Oil Finish *lb. 2.70@2.80¢*

Weights—Hitching—

Covert Mfg. Co. 40%
Covert's Saddlery Works 60&10%

Sash—

Per ton, f.o.b. factory:
Eastern District $27.50@$28.00
Southern Territory $20.00@$23.00
Western and Central Districts $23.00@$25.00

Wheels, Well—

8-in., $1.55; 10-in., $2.00; 12-in., $2.50; 14-in., $4.00.

Wire and Wire Goods—

Bright and Annealed:
6 to 9 80%
10 to 18 80&2½%
19 to 26 80&7½%
27 to 36 80&2½%
Galvanized:
6 to 9 75&5%
10 to 14 75&7½%
15 to 16 72½&10&2½%
19 to 26 75%
27 to 36 72½%
Coppered:
6 to 9 75&5%
10 to 14 75&7½%
15 to 18 72½&10&2½%
19 to 26 75&10&5%
27 to 36 75%
Tinned:
6 to 14 75&10&2½%
15 to 18 75&7½%
Annealed, Steel and Tinned, on Spools 70&10&10@70&10&10&10%
Brass and Copper on Spools 60&5@60&10&5%
Brass, list Feb. 26, '96 15%
Copper, list Feb. 26, '96 25%
Cast Steel Wire 50%
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

List June 24, '03 90&25@90&30%
Brass Cup Hooks and Brass Screw Hooks 85&10%

Wire Cloth and Netting—

Galvanized Wire Netting 80&5@80&10%
Painted Screen Cloth, 100 ft., $1.10
Standard Galv. Hardware Grade:
Nos. 2, 2½ & 3 Mesh, sq. ft. 3 ¢
Nos. 4 and 5 Mesh, sq. ft. 3¼ ¢
No. 6 Mesh, sq. ft. 3½¢
No. 8 Mesh, sq. ft. 4 ¢

Wire, Barb—See *Trade Report*

Wrenches—

Agricultural 75&10&5@80%
Alligator or Crocodile 70&10@75%
Baxter Pattern S Wrenches 70&5@70&10%
Drop Forged S 45@45&5%
Acme 60&10%
Alligator Pattern 70%
Bull Dog 70%
Bemis & Call's:
Adjustable S 40%
Adjustable S Pipe 40%
Bemis Pipe 60%
Briggs Pattern 40%
Combination Black 40&5%
Combination Bright 40%
Merrick Pattern 50
Boardman's 40%
Coes' Genuine Knife Hdl. 40&10&5&5%
Coes' Genuine Steel Hdl. 40&10&5&5%
Coes' Genuine Key Model. 40&10&5&5%
Coes', Genuine Hammer Handle 40&10&5&5%
Coes' "Mechanics'" 40&10&10&5&5%
Donohue's Engineer 40&10%
Eagle 50&10%
Elgin Wrenches, ₱ doz. $6.25
Elgin Rethreading Attachment, one die, ₱ doz. $6.25
Elgin Extra Dies, ₱ doz. $3.00
Elgin Extra Jaws, ₱ doz. $1.75
Elgin Monkey Wrench Pipe Jaws, ₱ doz. $2.10
Gem Pocket 70%
Hercules 70%
W. & B. Machinist:
Case lots 50&5%
Less than case lots 50%
Solid Handles, P., S. & W. 50&10@60
Stillson 65%
Vulcan Chain 50%

Fruit Jar—

Triumph Fruit Jar Wrench, 5 gross lots, ₱ gross, $7.50; ₱ doz. $0.80

Wringers—

Tuttle Roller Press Mop Pail Wringer, each, $8.00; ₱ doz. $18.00

Wrought Goods—

Staples, Hooks, &c., list March 17, '92 90@90&10%

Yokes, Neck—

Covert Saddlery Works, Trimmed 70%
Covert Saddlery Works, Neck Yoke Centers 70%

Yokes, Ox, and Ox Bows—

Fort Madison's Farmers' & Freighters' list net

Zinc—

Sheet *per 100 lbs., $8.25@8.50*

For the Table of "Current Metal Prices" see the First Issue of Every Month.